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XV.

AN ANNOTATED LIST OF THE DIPTERA (FLIES) OF OREGON

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INTRODUCTION.

In the preparation of this list we have endeavored to get a representative collection of diptera from the state of Oregon, but we have had little or no opportunity to collect in some of the faunal areas. Collectors in the state will at least have something to work from and we hope to see the list greatly increased in the near future. Cosmopolitan species have been listed without giving any particular data. Considering the great area of the state and the diversity of ecological conditions, our list seems quite small and it is intended only as a preliminary report. Aldrich's Catalogue lists only 89 species of diptera from Oregon, but we must add to this number about 40 species having a general distribution and at least six species mentioned as occurring all along the Pacific coast. Of Aldrich's 89 species, we have been unable to find 24; seven of these are species described by Loew, five are Bigot's species, and six are species described by Williston. One hundred and seventy-eight species in this list have been described since the publication

of the Aldrich Catalogue, and several European species are included which were not known from North America at that time. The rediscovery of many old species has been more gratifying to us than the discovery of a number of undescribed ones.

Most of the collecting was done in the Hood River Valley, Forest Grove, the Mt. Jefferson region, and the section around Corvallis. Our collecting time has been short, as work on the list was commenced in the early summer of 1917, and most of the work had to be done in spare time. Naturally, we spent most of the limited time at our disposal in collecting specimens that were of especial interest to us; as a consequence, many of the families are not adequately represented. The diptera collection at the Oregon Agricultural College formed a nucleus on which to build; the earliest records are a little previous to 1900, and some specimens were collected in 1906 and 1907 by Mr. J. C. Bridwell. No extensive collections of Oregon diptera are known to us outside of those we have assembled.

Space does not permit of a detailed comparison of this list with others, such as the New Jersey and Florida lists written by C. W. Johnson, but such a comparison is interesting to the student of distribution. This preliminary paper lists 953 species from Oregon; Johnson gives 845 species for Florida and 1662 species for New Jersey. Certain families of the diptera are well represented in Oregon, although only one group, the Syrphidæ, has been collected extensively. In the Asilidæ only one species is common to Oregon and Florida and there is no species common to Oregon and New Jersey. Each region has a distinct dipterous fauna, with a sprinkling of widely distributed forms, some of which are boreal and some cosmopolitan.

PHYSICAL FEATURES OF OREGON

The state of Oregon has an area of 95,607 square miles. In altitude, it ranges from sea level to over 10,000 feet on some of the mountain peaks. The annual rainfall ranges from 70 inches or more on the coast to nine inches in parts of the eastern plains region.

The Cascade Range has a great effect on the climate and faunal distribution; the Coast Range has less influence, being

low and more or less broken; distinct in the north, it is merged into a complex mass in the south known as the Klamath Mountains, a joining of the Cascade, Sierra Nevada and Coast ranges. Toward the south, the general elevation west of the Cascades increases.

Forest Grove is about 28 miles west of Portland in a region of rolling hills which are heavily wooded to the north and south. There is a good deal of level farmland with occasional patches of woodland or swamp. The annual rainfall is about 45 inches, the wet season coming in the winter and spring. Corvallis is about 65 miles south of Forest Grove, in what is known as the Willamette valley region. Many of our records are from Mary's Peak, a mountain in the Coast Range of about 4,000 feet elevation, lying some 15 miles south of Corvallis.

The seacoast is largely a series of sand-beaches interrupted by rocky headlands, and is a region of rather heavy rainfall. The summers are cool, and a heavy growth of grass and ferns spreads over the sand ridges. Several miles north of Tillamook, these ridges inclose a number of lakes. The last geological movement of the coast region here was one of subsidence, the sea advancing over the land and drowning the rivers in the lower portion of their channels.

The Hood River Valley is a great sloping lava plain from the foot of Mt. Hood to the Columbia River; through this old plain the Hood River has cut a deep channel. Most of the land is very fertile and the uncleared sections are well forested. The section known as Dee is in the middle valley, much higher than the level of the Columbia. Parkdale is almost at the foot of Mt. Hood and has an elevation of about 3,000 feet. Over the eastern rim of hills lies the Mosier Valley, a different type of country. In these few miles the rainfall drops from 30 to about 12 inches, and crossing the next range of hills, we come to the Dalles, at the edge of a great, wind-swept, arid region.

The picturesque region around Mt. Jefferson has furnished many interesting records in the diptera. Mt. Jefferson rises rather abruptly from the rim of Lake Pamelia, which has an altitude of 3,800 feet, and towers majestically above the timber line to the zone of gnarled and twisted

spruce and barren wastes. North of the mountain is Jefferson Park or Hanging Valley, set in the backbone of the Cascades at an elevation of 5,400 to 6,000 feet. In ages past, great glaciers moved down from the mountain and formed this park, splitting as they advanced and going both east and west; their remnants are still present on the sides of the peak. The park is a series of beautiful clear lakes, clumps of trees, and meadows. In the spring, the wild flowers carpet the mountain meadows and the insects, while not abundant, are mostly uncommon forms, so that the collecting there is fascinating.

Oregon east of the Cascades is largely a plateau, broken in the far east and south by mountain ranges and low rocky hills. There are many fertile valleys, but much of the region is arid. The elevation averages 4,000 feet. Scarcely any collecting has been done in the Blue Mountains country or in the southeast where there are many lakes and small streams.

DISTRIBUTION

Collectors in the past have noted the fact that diptera from the western United States resemble those of Europe more closely than do the species in the eastern part of the country, there being many cases of specific identity. Osten Sacken discussed this resemblence at length in his "Western Diptera." The Trichoceræ are not so rare in California as Osten Sacken was led to think from his limited collecting, and in Oregon they are very abundant in the winter and early spring. The genus Villa (Anthrax) is not so well represented in Oregon as farther south, but the asilid genus Cyrtopogon is rich in species, many of the forms appearing to be limited to the Lower Boreal zone. The western syrphid genera Arctophila, Pocota and Pyritis are typically northwestern forms, and there are many species of Chilosia and Pipiza in this area. Two species of the cyrtid genus Eulonchus are not uncommon in parts of Oregon, but the two other known species in the genus are probably more southern in their range. The Blepharoceridæ are typically western diptera and are remarkably abundant in the Hood River valley of Oregon. The western fauna as a whole is limited to the line of *summer dryness* in its spread to the

eastward, and this line seems more impassable than the Rocky Mountains. The summers are usually dry some distance west of the Cascades in Oregon.

The life zones of Oregon have not been worked out in detail like those of California, but the general divisions are known. Diptera are not so limited in their distribution as are the majority of plants and animals, but they are for the most part characteristic of certain areas and associations. Our material is much too meagre to work out their distribution and we shall not attempt any general conclusions on this point. The coastal strip is usually known as the Canadian or lower Boreal, except around the mouth of the Columbia River where the Transition comes in. Dr. E. C. Van Dyke has recently published a paper on the life zones of Oregon, Washington, and California, and certain of his terms are used in designating the different areas. The name Vancouveran corresponds very closely to the term Transition and is applied to nearly all of Oregon west of the Cascades; the fauna it contains is quite a distinct one. The Willamette valley is pure Vancouveran and Van Dyke believes that it has changed very little since the Tertiary period. A subdivision of this zone along the coast is termed the Pacific Maritime, and is found in western Washington and the northern coast region of California; it is a region of much moisture and many species in the coleoptera tend toward melanism there. There are some evidences of this tendency among the diptera from this region.

A modified branch of this Vancouveran starts in west central Oregon and runs south, including the mountains of southern Oregon and northern California; it follows along the western slope of the Cascades down into the California Sierra, possibly reaching into Lower California. In this Sierran fauna certain species seem to be broken up into rather weak races in the chaos of the Klamath Mountains. Above the Sierran we find the Canadian zone, which is not very extensive in Oregon. The great Upper Sonoran area of eastern Washington pushes down in a wedge to the center of Oregon, nearly connecting with the Upper Sonoran coming up through Nevada from Mexico; here we find the Great Basin fauna.

The Hudsonian zone is narrowed in Oregon and follows down the Cascades into the Sierra of California, ascending as it goes south, until in southern California it is limited to a few mountain peaks. The zones of eastern Oregon have not been carefully worked out, but there are a number of mountains extending up into the Canadian and Hudsonian zones. A great many records will be added to the diptera list when this region is worked over. Many of the typical Californian zone species are not found in Oregon as far as our collecting shows, but we have obtained some of these forms and more will be found in the southern part of the state. The Vancouveran and Pacific Maritime zones are rich in species of Mycetophilidæ, many of which are undescribed.

ACKNOWLEDGMENTS

The general arrangement of this list was planned by both authors. Prof. Lovett has written up the Syrphidæ and we are indebted to Mr. Leroy Childs for much of the work on the Tabanidæ and for material collected at Hood River. The senior author is responsible for the work on the other families of diptera, except where material was turned over to specialists in some of the groups, and for the drawings illustrating most of the families represented.

Several dipterists have been of help to us in determining material in families in which they are specializing, and to the following we wish to express our thanks: Mr. J. R. Malloch, Dr. C. P. Alexander, Mr. M. C. Van Duzee, Dr. J. M. Aldrich, Prof. J. S. Hine, Dr. A. L. Melander, Mr. A. Spuler, Dr. E. P. Felt, Prof. R. C. Osburn, Mr. E. T. Cresson, Jr., and Mr. C. H. Curran. We are also indebted to the entomologists at the Oregon Agricultural College for specimens they have collected and to the following members of the staff of the Forest Grove Experiment Station, Bureau of Entomology, U. S. Department of Agriculture: Mr. M. C. Lane, Mr. L. P. Rockwood, Mr. J. B. Thompson, Mr. A. C. Burrill, Mr. C. W. Creel, and Mr. M. M. Reeher. Mr. E. P. Van Duzee has added several records from southern Oregon which were particularly valuable because we know so little of the diptera in that region.

Family TIPULIDÆ

Fig. 1. *Nephrotoma erythrophrys* Will. Wing and head from side.

The craneflies are usually quite easily distinguished from the other diptera by the long legs and characteristic wing venation. They have a blunt snout and often very long palpi. One of the other distinguishing marks of the family is a V-shaped suture on the upper part of the thorax. A few species are wingless. The adults frequent meadows and edges of woods where there is a rank growth of vegetation and most are found near water. Many species come to lights.

The larvæ are aquatic or semi-aquatic and are usually root feeders and scavengers. The terrestrial larvæ are commonly known as "leather jackets" and may injure root crops.

Nearly all of the species listed below were determined by Dr. C. P. Alexander; these are marked C. P. A. det.

1. **Dicranomyia concinna** (Will.)

Hood River, VI-3 (Cole). C. P. A. det. Described as a Limnobia.

2. **Dicranomyia particeps** Doane

Hood River, X-26 (Cole). 1908, Ent. News, XIX, p. 7.

3. **Dicranomyia stigmata** Doane

Corvallis, IV-18. C. P. A. det.

4. **Geranomyia diversa** O. S.

Hood River, X-30 (Cole). C. P. A. det.

5. **Limnobia californica** O. S.

Forest Grove, IV-20 (Cole). C. P. A. det.

6. **Limnobia sciophila** O. S.

Corvallis, IV-20 and V-28; Mt. Angel (Epper). C. P. A. det. Very common at Forest Grove in September and October around thickly wooded sections. A disturbance of the underbrush in more or less moist sections will often start hundreds of them into flight.

7. **Dicranoptycha sobrina** O. S.

Forest Grove, VII-8 and 12 (Cole).

8. **Ormosia subcornuta** Alex.

Forest Grove, III-20 to 26 and Hillsboro, IV-1 (Cole). A good series of this small form was taken in a small swampy area. 1920, Pomona College Journ. Ent. and Zoology, XII, 88. The western representative of *O. meigenii* (O. S.)

9. **Ormosia stylifer** Alex.

Forest Grove, VI-3 (Cole). C. P. A. det. 1919, Insec. Insc. Mens. VII, p. 146. A species near *deviata* Dietz.

10. **Erioptera alicia** Alex.

Forest Grove, VI-3 (Cole). C. P. A. det. Two females collected. Previously known from the single type female from Calif. 1914, Proc. Acad. Nat. Sci. Phila., LXVI, p. 585.

11. **Erioptera oregonensis** Alex.

Tillamook, III-26 (A. C. Burrill). 1920, Pomona College Jour. Ent. and Zoology XII, 87.

12. **Molophilus comatus** Doane

Hood River, X-1 (Cole). C. P. A. det.

13. **Molophilus nitidus** Coq.

Hood River, VI-2 (Cole); Forest Grove, V-4 (Burrill).

14. **Helobia hybrida** (Meig.)

Corvallis, V-29; Hood River VI-8 (Cole). C. P. A. det.

15. **Cladura oregona** Alex.

Forest Grove, IX-30 (Cole). C. P. A. det. 1919, Insec. Insc. Mens., VII, p. 147.

16. **Crypteria americana** Alex.

Mt. Angel (Epper). 1917, Can. Ent., XLIX, p. 29.

17. **Phyllolabis latifolia** Alex.

Forest Grove, III-28 (Cole). 1920, Pomona College Journ. Ent. and Zoology, XII, p. 90.

18. **Limnophila cressoni** Alex.

Corvallis, IV-29 (Cole). C. P. A. det. 1917, Can. Ent., XLIX, p. 208.

19. **Eriocera sp.** near **eriophora** Will.

Grant Co., VII-1 (Chamberlin). One mutilated specimen. C. P. A. det.

20. **Tricyphona ampla** Doane

Corvallis, IX-25; Forest Grove, V-5, 20 and X-3 (Cole). C. P. A. det.

21. **Tricyphona aperta** Coq.

Hood River, VI-8 (Cole). det. with a doubt by Alexander.

22. **Tricyphona constans** Doane

Forest Grove, III-29 (Cole). C. P. A. det.

23. **Tricyphona sparsipunctata** Alex.

Corvallis, V-14 (Moulton); Hillsboro, IV-1 (Cole). 1920, Pomona College Journ. Ent. and Zoology, XII, p. 90.

24. **Polyangæus maculatus** Doane

Forest Grove, V-20 (Cole). One specimen.

25. **Ctenophora angustipennis** Loew

Common at Corvallis and vicinity in April and May, but taken as late as October 29. The tunnels of the larvæ in

dead heartwood of prune trees allows the winter rains to soak in and Prof. Lovett has found the species to be of some economic importance for this reason.

26. **Nephrotoma californica** (Doane)

Corvallis, VI-2. 1908, Ent. News, XIX, p. 176.

27. **Nephrotoma erythrophrys** (Will.)

Joseph. C. P. A. det.

28. **Nephrotoma ferruginea** (Fabr.)

Hood River, VI-3 to 15 (Cole). The larvæ were collected around the bases of strawberry plants in large numbers in early May, at which date some had commenced to pupate. The damage to the plants could not be easily estimated as the strawberry-root weevil was at work in the same places. C. P. A. det.

29. **Nephrotoma macrophallus** (Dietz)

Forest Grove, VII-8 (Cole). C. P. A. det. 1918, Trans. Amer. Ent. Soc., XLIV, p. 114.

30. **Holorusia rubiginosa** Loew

Corvallis, VI-10; Oswego; Cascadia, VIII; Hood River, VI (Cole).

31. **Tipula æqualis** Doane

Forest Grove, VII-22 (Cole).

32. **Tipula albofascia** Doane

Corvallis, V-22-1898.

33. **Tipula angustipennis** Loew

Corvallis; Forest Grove, IV-20 to V-10 (Cole). C. P. A. det.

34. **Tipula armata** Doane

Corvallis; Forest Grove, V-17 (Cole). C. P. A. det.

35. **Tipula californica** Doane

Corvallis IX-25; Forest Grove V-20 (Cole). C. P. A. det. 1912, Annals Ent. Soc. Amer., V, p. 49.

36. **Tipula carinata** Doane

Corvallis, X-26 to XI-21.

37. **Tipula fallax** Loew

Corvallis, IV-18 to V-9.

38. **Tipula pubera** Loew

Corvallis, V-12 (Gentner). C. P. A. det.

39. **Tipula retusa** Doane

Forest Grove, VII-22 (Cole). C. P. A. det.

40. **Tipula** 5 **pernax** O. S.

Corvallis, V-5 and IV-19 (Cole). C. P. A. det.

41. **Tipula streptocera** Doane

Corvallis, VI-13. C. P. A. det.

42. **Tipula tristis** Doane

Forest Grove, V-5 (Cole).

43. **Tipula unicincta** Doane

Corvallis, V-25. C. P. A. det.

44. **Tipula usitata** Doane

Corvallis, VI-2.

Family PTYCHOPTERIDÆ

These crane-flies are distinguished from the Tipulidæ by having the V-shaped suture poorly defined and by lacking the second anal vein. The larvæ are quite remarkable in structure, having an extensile, elongated breathing tube on the caudal end. The pupa has one of the thoracic horns greatly elongated and breathes through this while the body is covered with mud or water.

45. **Ptychoptera lenis** O. S.

Hood River, VI-5 (Cole). C. P. A. det.

46. **Bittacomorpha occidentalis** Aldr.

Hood River, VI-3 (Cole). This is undoubtedly the species recorded from Oregon by Osten Sacken in "Western Diptera" as *clavipes*.

47. **Bittacomorphella**[1] **sackenii** (Röder)

Hood River, VI-5 (Cole). C. P. A. det.

Family RHYPHIDÆ

Fig. 2. *Rhyphus alternatus* Say. Wing, and head from above.

This small family should be changed from the old position as it is now connected with the Tipulidæ through the Trichocerinæ. The flies of the genus Trichocera are quite different from the others of the family in general appearance and wing venation, but the early stages are so near the Rhyphinæ that they have recently been placed in their present position by Dr. Alexander.

48. **Rhyphus alternatus** Say.

Corvallis, V-25; Albany, V-2 and Forest Grove, IV-20 (Cole).

49. **Trichocera**[2] **colei** Alex.

Forest Grove, XI-11, III-20, 26, and Hillsboro, IV-1 (Cole). C. P. A. det. 1919, Can. Ent., LI, p. 162. Paratypes of this species were reared from turnips at Vancouver, Wash., Dec. 12, 1918 (Wm. Giles).

[1]Genus *Bittacomorphella* Alexander 1916, Proc. Acad. Nat. Sci. Phila., LXVIII, p. 545.

[2]The species of this genus in North America will have to be compared with the European forms before they can be made out with any certainty. Many of the species seem to be holarctic and it is probable that some of our names are synonyms. Some of the species collected in Oregon could not be determined owing to this condition in the taxonomy of the group.

50. **Trichocera trichoptera** O. S.

Forest Grove in Dec., Jan. and Feb. (Cole). C. P. A. det.

Family DIXIDÆ

Small slender flies, all belonging to the genus Dixa. There are eight species listed from North America. The adults resemble mosquitoes but are not pilose and do not bite; they are found in moist localities where there is abundant vegetation. The larvæ are aquatic and resemble mosquito larvæ.

51. **Dixa centralis** Loew

Hood River, X-1 (Cole).

Family PSYCHODIDÆ

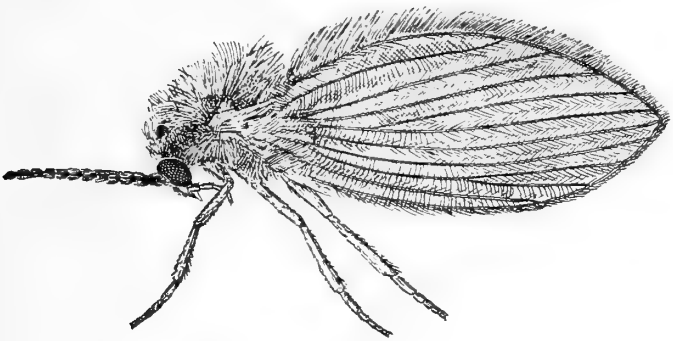

Fig. 3. *Psychoda cinerea* Banks.

The moth-flies are attracted to lights in great numbers. Some are found on tree trunks and many in damp, shady places, often on the undersides of leaves or on the surface of some stagnant pond. They are also found on windows and in outhouses in the winter and spring.

Many of the species have aquatic larvæ, Maurina (Pericoma) preferring swift streams and being provided with ventral suckers on the abdomen. Some larvæ occur in cowdung and in decaying vegetable matter. The larvæ have spiracles and tracheal gills.

52. **Psychoda cinerea** Banks

Common at Hood River and Forest Grove in late December and January. On rainy days many could be found under old sheds or in protected places on the bark of trees; females were observed about excrement.

53. **Psychoda schizura** Kincaid

Hood River, VII-9 (Cole).

54. **Psychoda sigma** Kincaid

Forest Grove, III-28 and VI-3 (Cole). On the latter date collected at light.

55. **Pericoma sitchana** Kincaid

Hood River, VI-19 (Cole).

Family CHIRONOMIDÆ

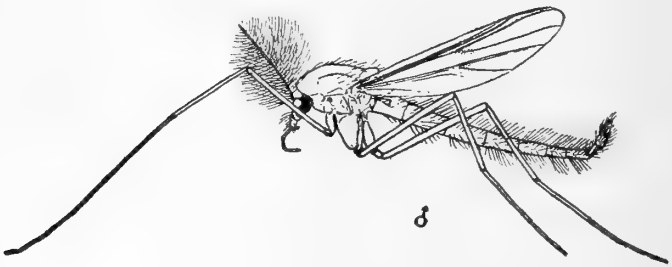

Fig. 4. *Chironomus colei* Malloch.

This family, the midges, now includes two subfamilies, the Tanypinæ and Chironominæ. They might be called "sunset-flies," often appearing in swarms at that time. Many are seen in the air in the autumn, dancing in the sunshine, usually near some body of water. They can be collected at lights in large numbers. The adults resemble mosquitoes superficially, but have poorly developed mouth parts and the costa is not continued all the way around the wing. The males, as in the Culicidæ, have feathery antennæ. Midges usually alight with the fore legs in the air and mosquitoes as a rule raise the hind legs.

Almost all the species are aquatic in the early stages, the larvæ feeding on decaying vegetable substances and tiny aquatic organisms. A few are terrestrial, one lives in sap and one species mines the leaves of water plants. Many species furnish food for trout.

56. **Chironomus colei** Mall.

Forest Grove, VI-3 (Cole). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 255.

57. **Chironomus plumosus** (Linn.)

Corvallis (Churchill).

58. **Chironomus riparius** Meig.

Forest Grove, III-10, 20 and VI-3 (Cole); Hillsboro, IV-1 (Cole).

59. **Chironomus viridis** Macq.

Forest Grove, V-17 (Cole).

60. **Tanytarsus**[3] **dissimilis** Johann.

Forest Grove, VI-2 (Cole). At light. 1905, N. Y. State Museum, Bull. 86, p. 292.

61. **Tanytarsus fatigans** Johann.

Forest Grove, III-28 (Cole). 1905, N. Y. State Museum, Bull. 86, p. 292.

62. **Tanytarsus obediens** Johann.

Forest Grove, IV-5 (Cole). 1905, N. Y. State Museum, Bull. 86, p. 286.

63. **Tanytarsus politus** Mall.

Forest Grove, III-20 and VI-3 (Cole); Forest Grove, V-4 (Burrill). 1915, Bull. Ill. St. Lab. Nat. Hist. X, p. 493.

64. **Metriocnemis flavifrons** Johann.

Forest Grove, III-26 to IV-14 (Cole). 1905, N. Y. State Museum, Bull. 86, p. 301.

[3]A number of species were collected at Forest Grove which could not be determined with certainty; some of them are probably undescribed.

65. **Cricotopus slossonæ** Mall.

Forest Grove, VI-3 (Cole). At light. 1915, Bul. Ill. St. Lab. Nat. Hist. X, p. 506.

66. **Cricotopus trifasciatus** Panz.

Forest Grove, VI-3 (Cole). At light.

67. **Camptocladius byssinus** Schrank

Very common at Forest Grove in early spring, often seen in swarms in sunny afternoons; III-3 to IV-5 (Cole).

68. **Orthocladius**[4] **obumbratus** Johann.

Forest Grove, III-28 and VI-3 (Cole); Hillsboro, IV-1 (Cole). 1905, N. Y. State Museum, Bull. 86, p. 281.

69. **Orthocladius nivoriundus** Fitch

Forest Grove, III-28 and Hillsboro, IV-1 (Cole).

70. **Orthocladius sordidellus** Zett.

Forest Grove, VI-3 (Cole). At light.

71. **Diamesa chorea** Lundb.

Forest Grove, VI-3 (Cole). At light.

72. **Paraclunio alaskensis** (Coq.)

Several specimens of this curious chironomid were taken at Seaside Beach by L. G. Gentner, VIII-15-1914. Aldrich lists the species from Newport in his Catalogue.

73. **Tanypus dyari** Coq.

Forest Grove. III-4 (Cole).

74. **Tanypus flavifrons** Johann.

Forest Grove, V-14 (Cole); Hillsboro IV-1 (Cole). 1905, N. Y. State Museum Bull. 86, p. 150.

75. **Tanypus monilis** (Linn.)

Forest Grove, III-26 to VI-3 (Cole).

[4]Species of this genus were common in the spring and early summer at Forest Grove and several of those collected are apparently undescribed.

Family CERATOPOGONIDÆ

We follow Malloch in making this group a family separate from the Chironomidæ. Here belong the "punkies" or "no-see-ums" which are wicked biters and are so small that an ordinary net will not keep them out. The thorax is large, but does not project over the head as in the true Chironomidæ. The species of Culicoides are especially bloodthirsty; some of the other genera are said to attack insects, attaching themselves to the body and wings.

The larvæ of most are aquatic or semi-aquatic, often being found in decaying wood that is submerged.

76. **Culicoides biguttatus** (Coq.)

Forest Grove, VI-3 (Cole). Taken at light. Malloch det.

77. **Culicoides sanguisugus** (Coq.)

Forest Grove, VI-3 (Cole). Taken at light. Malloch det.

78. **Forcipomyia cilipes** (Coq.)

Forest Grove, VI-3 (Cole). Malloch det. Taken at light.

79. **Serromyia femorata** (Meig.)

Forest Grove, V-5 (Cole). Malloch det.

80. **Hartomyia**[5] **mallochi** Cole, new species

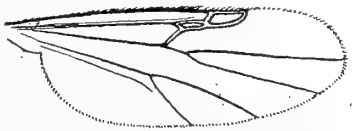

Fig. 5. *Hartomyia mallochi* Cole, n. sp. Wing of holotype.

Female: Length 1.5 mm. Head and its appendages black, the antennæ brownish black with pale pile. Mesonotum, scutellum and postnotum black subshining, the bristles black. Scutellum with a bristle on each side near the base and two

[5]This genus was erected by Malloch in 1915, Bull. Ill. State Lab. Nat. Hist. X, Art. VI, p. 339.

apical bristles. Pleura black, mostly shining. Halteres blackish near the base, the knob whitish.

Abdomen dull black, nearly devoid of pile on the basal half, the apical half with longer sparse brown pile. Legs entirely brownish black, the tarsal claws large and equal. Basal joint of hind tarsus a little less than twice as long as second joint; joints of the tarsi with pile longer than their diameters. Tip of hind tibia with several short bristles. Wings whitish hyaline, the anterior veins heavy and brownish yellow, the other veins very thin; petiole of the media about the length of the cross vein (see fig. 5); cubitus forks distinctly proximad of the cross vein.

Holotype, female, No. 828, Mus. Calif. Acad. Sci.; F. R. Cole collector, March 28, 1919.

Type locality, Forest Grove, Oregon.

The species would run to couplet 6 in Malloch's table of species, but differs from *antennalis* in size, color of halteres, and in lacking spines on the last tarsal joint. It is larger than *arctica* with large tarsal claws. The species is named for Mr. J. R. Malloch, the author of the genus, whose fine paper on the Chironomidæ of Illinois has been very useful in working up this family.

Family CULICIDÆ

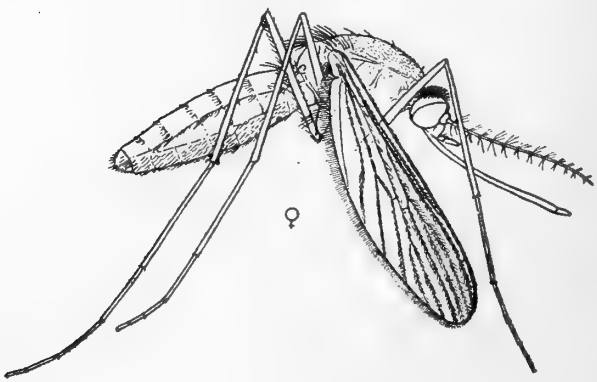

Fig. 6. *Culex pipiens* Linnæus.

The mosquitoes have the wings clothed with scales and there is no discal cell; the ocelli are lacking. Not all species bite and only a few come into houses. They are found at all altitudes and in all lands, myriads occurring in the Arctic. Birds and dragon-flies prey on the adults, and the larvæ serve as food for fishes and dragon-fly nymphs.

The larvæ are aquatic, some requiring little water for their development. They differ in habits, some feeding on decaying vegetable material and others preying on small organisms.

81. **Anopheles occidentalis** D. & K.

Corvallis; Klamath Falls (Dyar and Caudell). 1906, Proc. Biol. Soc. Wash., XIX, p. 159.

82. **Anopheles punctipennis** (Say)

Corvallis; Forest Grove, II and III (Cole); Portland, VI-30 (Dyar and Caudell).

83. **Anopheles pseudopunctipennis** Theob.

Corvallis, IX-6; Forest Grove, II-17 to XII-7 (Cole).

84. **Theobaldia annulata** (Schrank)

Reported from Calif. to B. C. in Aldrich's Catalogue.

85. **Culiseta consobrina** (Desv.)

Warm Springs.

86. **Culiseta incidens** (Thoms.)

Corvallis (Theobald); Klamath Falls (Dyar and Caudell).

87. **Culiseta inornata** (Will.)

Klamath Falls (Dyar). Reported from Cal. to B. C.

88. **Culiseta sylvestris** (Theob.)

Fish Lake.

89. **Culiseta stigmatosoma** (Dyar)

Klamath Falls (Dyar). 1907, Proc. U. S. Nat. Mus. XXXII, p. 123.

90. **Culex pipiens** Linn.

Forest Grove, III-26 (Cole).

91. **Aedes curriei** (Coq.)

Burns; Klamath Falls VII-27 (Dyar and Caudell); Corvallis.

92. **Aedes hexadontus** Dyar?

Corvallis. Dr. Dyar in making the determination of this and the following species stated that males were necessary for a certain determination of the species. 1916, Ins. Insc. Menstr., IV, p. 83.

93. **Aedes palustris** Dyar

Corvallis. 1916, Ins. Insc. Menstr., IV, p. 89.

94. **Aedes varipalpus** (Coq.)

Ashford (Dyar and Caudell); Portland (Currie).

Family MYCETOPHILIDÆ

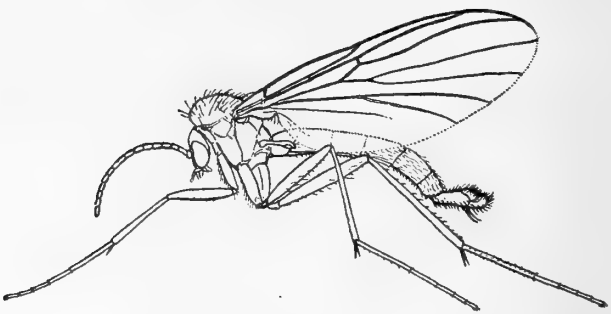

Fig. 7. *Boletina atra* Cole, n. sp. Drawing of holotype.

In the fungus-gnats the abdomen ends in a forceps-like process in the males, and in a pointed ovipositor in the females. The thorax is usually highly arched. Malloch has recently divided this group into five families but in this paper only the Sciara group is considered as a separate family.

The adults are found in situations conducive to fungus

growth, damp, dark places, and can often be swept from grass in shady places. Some are found on tree trunks; and windows in old deserted houses are good places to collect in certain seasons. Western Oregon is undoubtedly rich in forms of this group and the list given below could be greatly increased by one interested in the family. In addition to the species we have listed there are some which could not be identified with certainty, owing to the lack of material or to the imperfect condition of the specimens. One species each of Leia, Brachypeza, Rhymosia, Odontopoda and Mycomya were taken and six species of Mycetophila, which could not be identified.

95. **Bolitophila hybrida** (Meig.)

Forest Grove, III-28 (Cole); Tillamook, III-26 (Burrill).

96. **Symmerus annulatus** (Meig.)

Several specimens, taken at Corvallis, IX-10 (Cole), are probably this species, which has been recorded from New Jersey and New Hampshire. The wing venation is the same as that given in Williston's Manual on page 134 (Plestiana), but the wing is more pointed.

97. **Diadocidia borealis** Coq.

Forest Grove, II-10, III-14 and V-2 (Cole). In one female the tip of the first radial vein is distinctly proximad of the end of the anterior branch of the cubitus.

98. **Apemon**[6] **maudæ** (Coq.)

Corvallis, V-3 to V-30.

99. **Apemon pectoralis** (Coq.)

Corvallis, VI-4.

100. **Platyura nigra** Cole

Forest Grove, V-20 (Cole). 1919, Proc. Cal. Acad. Sci. Ser. 4, IX, p. 222.

101. **Macrocera formosa** Loew

Hood River, V-2 (Cole).

[6]1909, Genera Insectorum, Mycetophilidæ, p. 20.

102. **Tetragoneura pimpla** Coq.

Forest Grove, II-17 (Cole).

103. **Tetragoneura quintana** Cole, new species

Male: Length, 3.5 mm. General body color black. Head black, the palpi and other mouth parts blackish brown. Antennæ blackish, the third joint twice as long as wide, the succeeding joints decreasing in length to the last joint, which is half again as long as the penultimate.

Mesonotum, scutellum, pleura and postnotum black, with a brownish tinge, made lighter by the gray pollen. Bristles of thorax yellowish. Halteres brownish yellow, the knobs darker.

Abdomen dull blackish brown with sparse yellowish pile. Hypopygium blackish brown, the lower forceps rather large, the tip excavated, with a yellow thorn below. Hind legs blackish brown, including the coxæ; middle legs with the femora yellowish brown; fore legs with the coxæ, femora and base of tibæ more or less yellowish. Wings grayish hyaline, the costa and radial veins heavy and dark brown, the other veins thinner and paler; subcosta ends in R_1 nearer the base of the radial sector than the humeral cross-vein. Cell R_1 very small, usually forming a small triangle; anterior branch of cubitus detached at base but reaching proximad of base of R-M cross vein.

Female: Much like the male, the femora paler. Genitalia yellowish. The basal two joints of the antennæ yellowish and angles of pronotum yellow.

Holotype, male, No. 829, and *allotype,* female, No. 830, Mus. Calif. Acad. Sci.; F. R. Cole, collector, March 27, 1919.

Type locality, Forest Grove, Oregon.

This is the fifth species in the genus Tetragoneura one of which is a fossil species. The one described above is in the group with *bicolor* and *pimpla,* where the subcosta ends in R_1 but differs in color from both of these, in the shape of the cell R_1, and in the forking of the cubitus, the anterior branch not being detached in the related species.

104. **Sciophila hirta** Meig.

Forest Grove, III-15 (Cole). One female was taken and the description given by Johannsen fits it exactly. The length is 5 mm and the length of the wing 5 mm. It is a European species reported from Greenland.

105. **Dziedzickia**[7] **immaculata** Cole

Forest Grove, V-2 (Cole). 1919, Proc. Cal. Acad. Sci. Ser. 4, IX, p. 222.

106. **Dziedzickia oregona** Cole

Forest Grove, II-10 (Cole). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 223.

107. **Mycomya mendax** Johann.

Forest Grove, II-10 and V-2 (Cole). 1910, Maine Agr. Exp. Sta., Bull. 180, p. 182.

108. **Neuratelia**[8] **coxalis** (Coq.)

Forest Grove, III-28 (Cole). Several specimens collected. 1905, Jl. N. Y. Ent. Soc., XIII, p. 68 (Anaclinia).

109. **Boletina atra** Cole, new species

Male: Head, thorax, and abdomen black. Antennæ and mouth parts black. First two antennal joints about as broad as long, the last joint longer than any of the preceding eight. Mesonotum, pleura and scutellum thinly gray pollinose; the median dorsal stripe on mesonotum semishining, wedge-shaped and divided by a longitudinal row of short yellow bristles; on either side of the median vitta is a faintly defined oval spot destitute of pollen; bristles of the thorax yellow. Halteres yellow.

Abdomen, including the genitalia, opaque black; pile of the genitalia black, the rest of the abdominal pile yellowish. Lateral claspers of the genitalia with two small curved apical spines and a larger yellow pre-apical spine. Fore coxæ more or less yellow, the two hind pair black. Femora and tibiæ yellowish, the trochanters and tips of the hind femora brown; tarsi blackish brown; tibial spurs brown. Wings

[7]1909, Genera Insectorum, Mycetophilidæ, p. 44.

[8]1856, Dipterologiæ Italicæ, Prodromus I, p. 195.

nearly hyaline, the apical half grayish; costal and radial veins heavy and black, the other veins lighter; Sc ends in C slightly beyond base of Rs; Cu forks slightly distad of the base of the R-M cross vein; costa prolonged beyond tip of Rs nearly half way to M_1 (see fig. 7).

Female: Very nearly the same as the male in color and structure. The last antennal joint proportionately shorter than in the male. Genitalia brown.

Holotype, male, No. 831, and *allotype,* female, No. 832, Mus. Calif. Acad. Sci.; F. R. Cole, collector, March 14, 1919.

Type locality, Forest Grove, Oregon.

The writer collected three female paratypes at Forst Grove and Hillsboro, Oregon, a little later in the year. The species is very near *sobria* Johannsen. A single male of a closely related species was collected at about the same time and near the same place; this form is clearly separable only by characters of the male genitalia.

110. **Boletina inops** Coq.

One pair taken at Forest Grove, I-10 (Lane); same locality, X-11 (Cole).

111. **Leia winthemi** Lehmann

Forest Grove, IX-14 (Cole).

112. **Phthinia curta** Johann.

Forest Grove, II-20 and XII-17 (Cole). 1911, Fungus Gnats of N. A., part III, p. 291.

113. **Cœlosia flavicauda** Winnertz

Hood River, X-11 (Cole).

114. **Cœlosia pygophora** Coq.

Forest Grove, III-21 (Cole). One specimen taken. 1904, Proc. Ent. Soc. Wash., VI, p. 170.

115. **Rhymosia sp. A.,** Johann.

Forest Grove, V-17 (Cole). 1911, Fungus Gnats of N. A., part III, p. 310.

116. **Telmaphilus tenebrosa** (Coq.)

A single male, taken at Forest Grove, III-21 (Cole), in most respects answers the description of the female given by Coquillett. It differs in having all of the coxæ blackish, the femora and tibiæ brown, the tarsi blackish brown. Wings as figured by Johannsen.

117. **Exechia**[9] **cincinnati** Johann.

Forest Grove, V-5 and XI-15 (Cole). 1912, Fungus Gnats of N. A., part IV, p. 69.

118. **Exechia obediens** Johann.

A very common species in winter and early spring at Forest Grove. 1912, Fungus Gnats of N. A., part IV, p. 73.

119. **Exechia umbratica** (Aldr.)

Corvallis, XI-15.

120. **Dynatosoma nigrina** Johann.

Forest Grove, III-6 (Cole). One female collected. 1912, Fungus Gnats of N. A., part IV, p. 75.

121. **Mycothera fenestrata** (Coq.)

Forest Grove, II-10 to XII-13 (Cole). One of the commonest mycetophilids in this locality.

122. **Mycetophila falcata** Johann.

Forest Grove, V-2 (Cole). 1912, Fungus Gnats of N. A., part IV, p. 93.

123. **Mycetophila fatua** Johann.

Forest Grove, II-25 (Cole). op. cit. p. 102.

124. **Mycetophila lassata** Johann.

Forest Grove, III-6 (Cole). op. cit., p. 101.

125. **Mycetophila lenta** Johann.

Tillamook, III-26 (Burrill). op. cit., p. 102.

[9]The species of this genus are very difficult to separate, the male genitalia offering the best characters for classification. There are at least five undetermined species in material collected at Forest Grove from April to December.

126. **Mycetophila monochæta** Loew

Forest Grove, IV-5 (Cole); Corvallis, I-14 (Gentner).

127. **Mycetophila mutica** Loew

Forest Grove, III-6 (Cole). Large series taken.

128. **Mycetophila mutica var. A,** Johann.

Forest Grove, III-14 (Cole). 1912, Fungus Gnats of N. A., part IV, p. 93.

129. **Mycetophila perita** Johann.

Forest Grove, V-14 (Cole). op. cit., p. 90.

130. **Mycetophila punctata** Meig.

Forest Grove, V-14 (Cole); Tillamook. III-26 (Burrill). This is one of the commonest and most widely distributed species. The Oregon specimens are darker than eastern specimens in my collection.

131. **Mycetophila scalaris** Loew

Hood River, X-2 (Cole).

Family SCIARIDÆ

These small flies are separated from the Mycetophilidæ by several dipterists and are easily recognized by the venation and much shorter coxæ.

The larvæ are scavengers but some do damage to mushrooms. Many species breed in leaf mold.

132. **Sciara**[10] **scita** Johann.

Newport (Aldrich), type locality. 1912, Fungus Gnats of N. A., part IV, p. 135.

133. **Neosciara**[11] **munda** (Johann.)

Forest Grove, III-26 and IV-5 (Cole). 1912, Fungus Gnats of N. A., part IV, p. 127.

[10]Several species of this genus were taken which cannot be identified with certainty without male specimens; some are probably undescribed.

[11]1918, Ann. Ent. Soc. Amer. XI, p. 320.

134. **Eugnoriste occidentalis** Coq.

Albany, VI-17 (Creel). This species has a long proboscis and feeds on flowers.

Family CECIDOMYIIDÆ

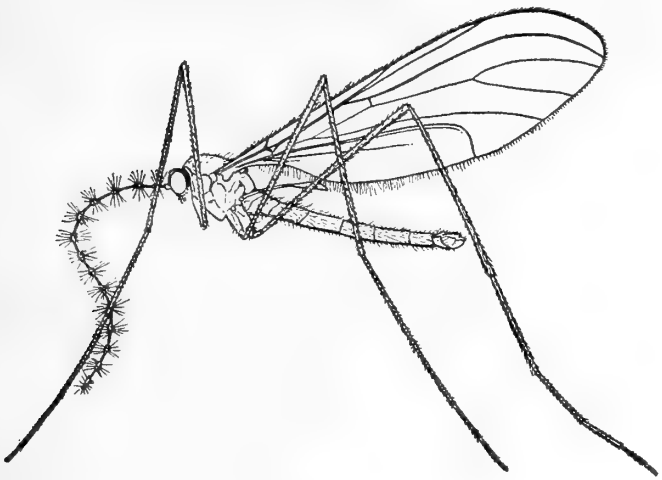

Fig. 8. *Hormosomyia oregonensis* Felt. Drawing of homo-topotype.

In the little gall-midges the antennæ are many jointed and often with whorls of hairs. There are usually three longitudinal veins and the costa continues around the wing.

The family is an immense one and the larval habits vary somewhat. A great majority of the species cause abnormal growths on plants and some are recognized by their galls alone.

Scarcely any material was taken in this family, most of that sent to Dr. E. P. Felt being probably undescribed. More specimens will be required before the identification of the species of Lestremia, Prionellus, Rhabdophaga and Lasioptera can be made with certainty. A female of a species of Lasioptera taken near Forest Grove has 36 antennal segments, more than have been recorded from any other American species according to Dr. Felt.

135. **Mayetiola destructor** (Say)

This famous wheat pest, known as the Hessian Fly, is found west of the Cascades in Oregon and often does considerable damage.

136. **Aphidoletes meridionalis** Felt

Specimens taken at Forest Grove and Corvallis (Rockwood and Lovett). 1908, N. Y. State Mus., Bull. 124, p. 397.

137. **Prionellus boulderensis** Felt

Recorded from Oregon by Felt.

138. **Dasyneura leguminicola** (Lintn.)

The clover seed midge, common throughout western Oregon and an important pest in many clover growing sections.

139. **Hormosomyia**[12] **oregonensis** Felt

Forest Grove, X-10 (Cole). Described as a new genus and species in the Porricondylariæ in the article referred to above. It is one of the non-gall-making species. Two males were taken of this species.

140. **Colpodia colei** Felt

Forest Grove, VI-2 (Cole). This species is described by Dr. Felt as related to *C. americana*. 1919, Ent. News, XXX, p. 223.

[12] 1919, Ent. News, XXX, p. 220.

FAMILY BIBIONIDÆ

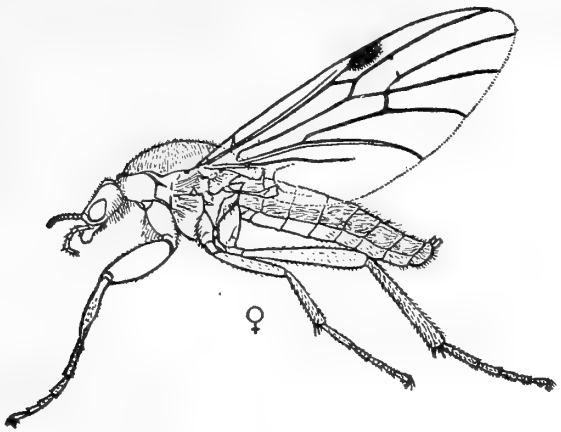

Fig. 9. *Bibio nervosus* Loew

The males and females of these ungainly little "March flies" often differ considerably, the females having grotesque little heads. They emerge in April and May and often on bright sunshiny days they will appear in swarms, sailing about in an aimless sort of way.

The larvæ have a false segment behind the head which is well developed and has spiny processes. They are scavengers, feeding on decaying vegetable matter or excrement. A few feed on grass roots.

141. **Bibio hirtus** Loew

This species is usually less common that the following and emerges a week or more later. It has been reported as injurious to turnips in one section of the state.

142. **Bibio nervosus** Loew

Very common in spring and early summer.

143. **Bibio variabilis** Loew

Reported from Oregon by Coquillett.

144. **Dilophus serotinus** Loew

Odell, X-14 (H. F. Wilson).

145. **Dilophus tibialis** Loew

Hood River, VI-8 (Cole).

Family SCATOPSIDÆ

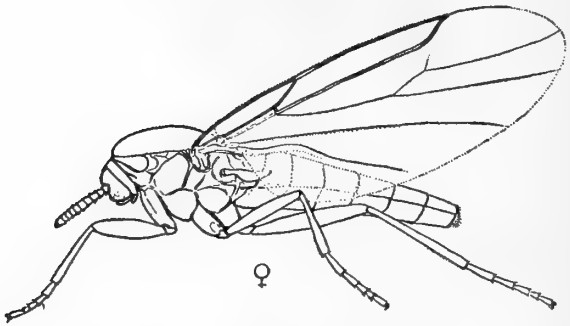

Fig. 10. *Scatopse notata* Linn.

These very small black flies were formerly included in the Bibionidæ but now are generally given family rank. The costa and two veins next to it are thickened, the other veins being very weak. The larvæ of all the known species are recorded as breeding in excrement. Several species have been bred from sewers.

146. **Scatopse notata** Linn.

Corvallis, XI-30 (Bridwell); Crystal Lake VI-8.

147. **Rhegmoclema**[13] **atrata** (Say)

Hood River, X-3 (Cole); Corvallis.

148. **Reichertella**[14] **collaris** Mel.

Corvallis, IX-10 (Cole), 1916 Wash. Exp. Sta., Bull, 130, p. 10.

[13] 1912, Zool. Anzeiger, XL, p. 276.

[14] 1912, Zool. Anzeiger, XL, p. 268.

Family SIMULIIDÆ

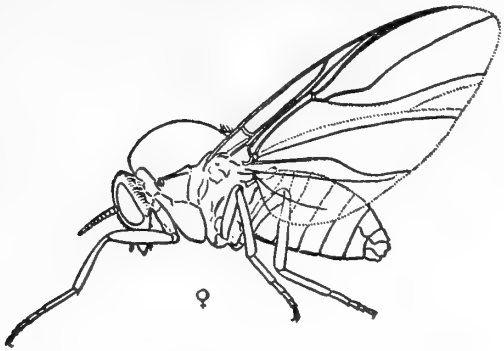

Fig. 11. *Prosimulium fulvum* (Coq.)

These tiny flies are easily recognized and are variously known as black-flies, buffalo gnats and sand-flies. The females "bite", as many are willing to testify, and are sometimes very troublesome to stock and man. The larvæ live in running water, often in swift currents, and feed on small animals and algæ. Peculiar fans on the head create a current toward the mouth. They are anchored to rocks by a sucking disc near the tail and by a silken line, and breathe by means of a peculiar organ near the tip of the body; the larvæ move like geometrid larvæ.

149. **Prosimulium fulvum** (Coq.)

Pamelia Lake, Mt. Jefferson, elevation 3,000 feet. (Bridwell). Malloch det.

150. **Prosimulium hirtipes** (Fries.)

Sand Mountain, VI-20; Dee, VI-17 (Cole); Forest Grove, IV-20 (Cole); Mt. Jefferson, VII-15 (Bridwell). Malloch det.

151. **Simulium bivittatum** Mall.

Hood River (Cole). Very common in July in the willow flats along the Columbia River. They make their appearance about sundown and late bathers then are glad to put

on their clothes and go home. 1914, U. S. Bur. Ent., Tech. Series, No. 26, p. 31.

152. **Simulium vittatum** Zett.

Narrows, VII-1. Malloch det.

Family BLEPHAROCERIDÆ

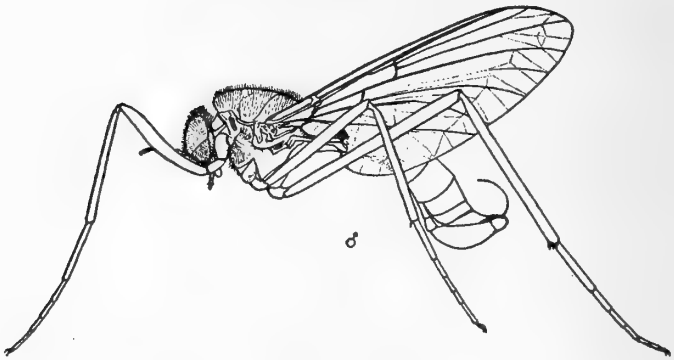

Fig. 12. *Bibiocephala grandis* O. S.

These flies could be mistaken for Tipulidæ at first glance. The venation is quite characteristic and there are creases in the membrane which give the impression of a secondary venation. The females are predaceous. The larvæ live in swift streams, attaching themselves to rocks by means of ventral suckers. They feed on minute aquatic organisms. Many of the flies are swept away in the swift current as they emerge from the pupal cases, being unable to get their wings unfolded in time. This may account for the few species in existence.

These flies are not uncommon along some of the swift streams of Oregon and one species of Blepharocera taken in the Hood River valley, as well as a small species of Bibiocephala occasionally collected, will be described later by Mr. Leroy Childs. These two undescribed species were not found in any such numbers as were the two forms listed below.

153. **Bibiocephala grandis** O. S.

Common at Hood River along the stream of that name. The first specimens were collected about the middle of May and were seen in large numbers up to the early part of June. They fly clumsily, like some of the tipulids, and will dash headlong into anything that happens to be in their way.

154. **Bibiocephala comstocki** Kell.

This species emerged later than *grandis* and was more abundant; its season was much longer and it was more active. In resting on the leaves of plants it would usually fly to the under side of the leaf and hang by its feet. In the swift water of the upper Hood River these flies could be seen flying and hovering close to the surface of the stream; they seemed to prefer shady places and were often flying after sundown.

Family STRATIOMYIDÆ

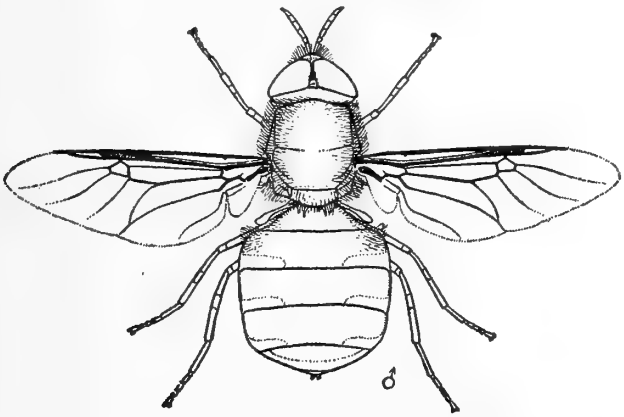

Fig. 13. *Odontomyia hoodiana* Bigot

The so-called "soldier-flies" have a strikingly characteristic wing venation; when at rest the wings are laid flat and overlapping on the abdomen. The abdomen is usually broad and flattened. The adults are flower flies, the smaller species being quite active and the larger ones usually slow.

155. **Beris annulifera** Bigot

Hood River, VI-8, 20 (Cole). The larvæ of the Berinæ are terrestrial and have been bred from moss.

156. **Scoliopelta luteipes** Will.

Multnomah Falls, IX-30 (Cole), two females taken in grass around a small spring. Williston had two males from Mt. Washington, N. H., which were 7 mm. in length. These specimens are about 9.5 mm.; the antennæ are more than two-thirds as long as the distance from their base to the ocelli, and there are a few other slight discrepencies, but these may be sexual differences.

157. **Sargus pallipes** Bigot

Hood River, VI-21 (Cole). This species like others of the genus, is found on the leaves of plants, usually in the sunlight.

158. **Sargus picticornis** Bigot

Hood River, V-15 (Cole).

159. **Sargus tricolor** Loew

Corvallis, V-12 and VII-7.

160. **Sargus viridis** Say

Very common at Hood River and Forest Grove during early summer.

161. **Stratiomyia atra** Cole

Empire, Coos Co., VII-27. 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 223.

162. **Stratiomyia barbata** Loew

Hood River, VI-21 (Cole).

163. **Stratiomyia discalis** Loew

Hood River, VI-6 to VI-21 (Cole).

164. **Stratiomyia laticeps** Loew

Reported from Oregon by C. W. Johnson.

165. **Stratiomyia maculosa** Loew
Common at Hood River, V-19 to VII-7 (Cole).

166. **Stratiomyia melanostoma** Loew
Reported from Oregon by C. W. Johnson.

167. **Odontomyia arcuata** Loew
Umatilla, VII-14 (H. F. Wilson).

168. **Odontomyia cincta** Oliv.
Blitzen River, VII-6; Ashland, VI-21 (Chamberlin).

169. **Odontomyia hoodiana** Bigot
Described from Mt. Hood. Quite common in the lower Hood River Valley during the month of June. Collected on marshy ground sloping toward the river.

170. **Odontomyia pilosa** Day
Described from California; Bigot described it five years later, as *pyrrhostoma,* from Mt. Hood.

171. **Euparyphus apicalis** Coq.
Hood River, IX-4 (Cole).

172. **Clitellaria lata** Loew
Corvallis, V-8 to VI-2; Mary's Peak and Kiger's Island.

Family TABANIDÆ

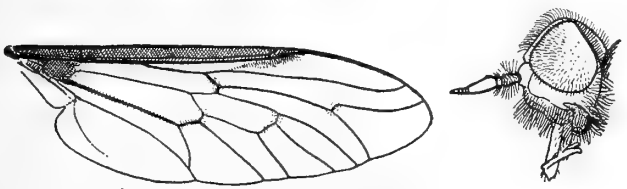

Fig. 14. *Tabanus procyon* O. S.

These flies are commonly known as "horse-flies", "gad-flies", "deer-flies", "green-heads", etc. They have short, broad heads and the eyes are often colored. The mouth

parts are a series of sharp lancets (four in the male, six in the female), enclosed in a lip-like organ. They are remarkable fliers and are fond of warm weather and sunshine. The males do not bite; feed on plant nectar or honeydew secreted by plant lice or scale insects.

The larvæ are found in rotting logs, under stones in ditches, or in mud along streams or other bodies of water. They are predacious and feed on various little animals.

173. **Pangonia dives** Will.

Hood River, VII-26 (Childs).

174. **Pangonia fera** Will.

Described from Mt. Hood. Horse Lake, VII-25; Mt. Jefferson, VII-27 (Bridwell).

175. **Chrysops coloradensis** Bigot

Rickreall, VII-23 (Allen). Hine det.

176. **Chrysops discalis** Will.

Warm Springs, VII-7.

177. **Chrysops excitans** Walk.

Mt. Jefferson, VII-12 (Bridwell); Horse Mt. Flats, VII-30. Cole det.

178. **Chrysops lupus** Whitney

Pamelia Lake, VII-27 (Bridwell); Corvallis, IX-26; Grant Co., VII-14.

179. **Chrysops noctifer** O. S.

Parkdale, VI-18 and Dee, VI-17 (Cole); Mt. Jefferson, VII-12 (Bridwell); Whitman Nat. Forest, VII-14 (Chamberlin).

180. **Chrysops pachycera** Will.

Buck Mt., VII-19. Cole det.

181. **Chrysops proclivis** O. S.

Common at Parkdale, VI-18 (Cole and Childs). Cole det.

182. **Chrysops surdus** O. S.

Mt. Jefferson, VII-16 (Bridwell); Pamelia Lake, VII-19 (Bridwell).

183. **Tabanus ægrotus** O. S.

Williston reports this species from Oregon. Corvallis; Mackenzie Ridge, VIII-27; Lava Lake, VII-25 (Lovett). Cole det.

184. **Tabanus captonis** Marten

Hood River, VIII-1 (Childs); Corvallis, V-12; Grant Co., VII-13; Whitman Nat. Forest, VII-14 (Chamberlin); Subalpine regions on Mt. Jefferson, VII-20; Mary's Peak, VII-18 (Gentner); Horse Lake, VII-25 (Bridwell). Hine det.

185. **Tabanus centron** Marten

Whitman Nat. Forest, VII-14 (Chamberlin). Cole det.

186. **Tabanus epistatus** O. S.

Hood River, VII-22 (Childs); Whitman Nat. Forest, VII-14 (Chamberlin); Grant Co., VII-8. Cole det.

187. **Tabanus insuetus** O. S.

Blitzen River, VII-6; large series from Whitman Nat. Forest, VII-11 (Chamberlin); Burns, VII-29. Cole det.

188. **Tabanus intensivus** Towns.

Horse Lake, VII-30 (Bridwell). Cole det.

189. **Tabanus laticeps** Hine

Whitman Nat. Forest, VII-12 (Chamberlin); Big Lake, VII-20 (Bridwell). Cole det.

190. **Tabanus leucophorus** Bigot

Described from Mt. Hood.

191. **Tabanus lineola** Fabr.

Hood River, VII-17 (Childs) and VI-25 (Cole).

192. **Tabanus opacus** Coq.

Whitman Nat. Forest, VII-18 (Chamberlin).

193. **Tabanus osburni** Hine

Large series from Whitman Nat. Forest, June and July (Chamberlin); Corvallis. Hine det.

194. **Tabanus phænops** O. S.

Corvallis, V-30; Whitman Nat. Forest, VII-14 (Chamberlin).

195. **Tabanus procyon** O. S.

Corvallis, V-29; Dee, VI-17 (Cole). This species is apparently rare in the northwest. Osten Sacken in his description in "Western Diptera" does not mention the long, black pile on the under and outer side of the femora, and the long, rather sparse, black pile on the tibiæ. The third antennal joint has scarcely any basal projection. Cole det.

196. **Tabanus punctifer** O. S.

Crooked River, VII-23; Mt. Jefferson, VIII-14 (Lovett); Corvallis, VII-22.

197. **Tabanus rhombicus** O. S.

Horse Lake, VII-25 (Bridwell). Hine det.

198. **Tabanus sequax** Will.

Hood River, VII-1 (Childs); Mt. Jefferson, VII-6 (Bridwell) and VIII-14 (Lovett); Mary's Peak, VII-14 (Lovett). Hine det.

199. **Tabanus sonomensis** O. S.

Whitman Nat. Forest, VII-14 (Chamberlin); Wilson River, VIII-6 (Reeher).

200. **Tabanus zonalis** Kirby

Three Sisters, VII-20 (Bridwell); Corvallis, V-20. Cole det.

201. **Silvius gigantulus** (Loew)

Corvallis, IV-15; Subalpine regions on Mt. Jefferson, VII-20 (Bridwell); Whitman Nat. Forest, VII-11 (Chamberlin); Sumpter, VII-5 (Wilson).

Family RHAGIONIDÆ (LEPTIDÆ)

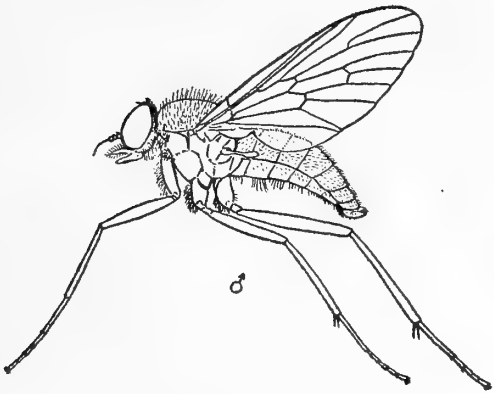

Fig. 15. *Rhagio dimidiata* (Loew)

In these flies the thorax is rounded and the abdomen usually pointed. The mouth parts are prolonged into a beak projecting downward and backward. Some of the species are predaceous but they are as a rule rather sluggish and are often found on flowers. They can be collected in dense woods on the tall grass and ferns and around swampy land. Some of them rest on the trunks of trees, usually head downward. The females of Symphoromyia attack man. Some forms are called "snipe flies." The name Leptidæ has long been applied to the family but as Rhagio Fabr. has priority over Leptis Fabr. the family name must change accordingly.

202. **Arthroceras pollinosum** Will.

Forest Grove, VII-8 (Cole). A single female of this rare species was taken in a densely wooded section. It was flying about close to the ground over small weeds and grass and was mistaken at the time for a species of *Chrysopila*.

203. **Dialysis aldrichi** Will.

Hood River, VI-12 (Cole); Wallowa, VI-8 (Creel).

204. **Triptotrichia discolor** Loew

Forest Grove, VI-2 (Cole); Corvallis, V-15 (Lovett); Mary's Peak.

205. **Triptotrichia lauta** Loew

Corvallis, V and VI; Rock Creek, VII-14 (Lovett).

206. **Rhagio albibarbis** (Bigot)

Hood River, VI-2 and Forest Grove, V-17 (Cole).

207. **Rhagio costata** (Loew)

Corvallis, VII-17; Forest Grove, VI-18 (Reeher); Corvallis and Newport in May.

208. **Rhagio dimidiata** (Loew)

Dewey, V-29; Corvallis, V-28 and V-7 (Lovett); Forest Grove, V-2 (Cole).

209. **Rhagio hoodiana** (Bigot)

Described from Mt. Hood.

210. **Rhagio incisa** (Loew)

Hood River, V-16 and 21 (Cole)

211. **Rhagio maculifera** (Bigot)

Forest Grove, VI-5 (Cole).

212. **Rhagio pruinosa** (Bigot)

Described from Mt. Hood.

213. **Chrysopila**[15] **testaceipes** Bigot

Hood River, VI-2 to VI-24 (Cole). Aldrich det.

214. **Chrysopila tomentosa** Bigot

Hood River, VI-2 to VII-5 (Cole). Aldrich det.

[15]One species in this genus, fairly common at Hood River, is apparently undescribed.

215. **Symphoromyia atripes** Bigot

Joseph.

216. **Symphoromyia inquisitor** Aldr.

Corvallis, V-29. 1915, Proc. U. S. Nat. Mus., XLIX, p. 127.

217. **Symphoromyia kincaidi** Aldr.

Mt. Jefferson, VII-15 (Bridwell). 1915, Proc. U. S. Nat. Mus., XLIX, p. 129.

218. **Symphoromyia latipalpis** Bigot

Described from Mt. Hood as *fulvipes*.

219. **Symphoromyia pachyceras** Will.

Described from Mt. Hood as *trivittata*. Corvallis, V-30; Forest Grove, V-2 (Cole).

220. **Symphoromyia plagens** Will.

Described from Mt. Hood. Corvallis, VI-14; five males at Parkdale, VI-18 and one female, in the act of biting, at Hood River, VII-17 (Cole).

221. **Hilarimorpha obscura** Bigot

Two specimens taken at Hood River, VI-2 (Cole).

Family XYLOPHAGIDÆ

This family has been included under the Rhagionidæ by many dipterists. The imagines are found in the woods, and frequent flowers. The larvæ live in earth or under the bark on trees and are predaceous; they are quite distinct from the larvæ of the Rhagionidæ.

222. **Xylophagus decorus** Will.

Corvallis, V-17; Mary's Peak, V-16 (Gentner).

223. **Xylophagus gracilis** Will.

Reported from Oregon by Williston.

224. **Xylomyia parens** (Will.)

Toledo; Corvallis, VII-18 (A. B. Black).

Family CYRTIDÆ

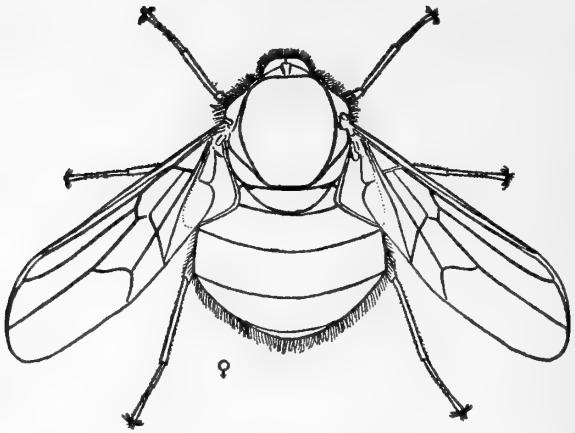

Fig. 16. *Pterodontia misella* O. S.

These curious little flies are usually very rare. The thorax and abdomen are large and inflated in appearance, and the head, which is composed almost entirely of the compound eyes, is quite small. All the species in North America have three pulvilli and enormous squamæ. Great variations occur within the family, especially in the wing venation and structure of the mouth parts. The larvæ are parasitic in the bodies or egg cases of spiders as far as known and apparently this parasitic mode of life has modified the structure of the flies.

225. **Pterodontia misella** O. S.

Described from Oregon. One specimen from Forest Grove, VI-5-1918 (M. C. Lane); a single female from Mary's Peak, V-15 (Moznette).

226. **Eulonchus sapphirinus** O. S.

A large series taken at Parkdale, VII-12 (Cole and Childs); Forest Grove, VI-3 and 5 (Cole); Mt. Jefferson, VIII-15 (Bridwell); Corvallis, V-20; Mary's Peak, VI-6 (Lovett); Buck Mt., VII-10.

227. **Eulonchus tristis** Loew

Several specimens taken at Parkdale, VI-18 (Cole and Childs); Alsea, Benton Co., VIII-6 (Bridwell); Lava Lake, VII-25 (Lovett); Mt. Jefferson, V-12 (Bridwell).

228. **Acrocera melanderi** Cole

Corvallis, VIII-18 (F. H. Lathrop). 1919, Trans. Amer. Ent. Soc., XLV, p. 55. The type was taken in Gallatin Co., Mont., elev. 6,400 feet, 1918.

229. **Oncodes melampus** Loew

Shedd, V-30; Hood River, VI-8 (Childs).

Family NEMESTRINIDÆ

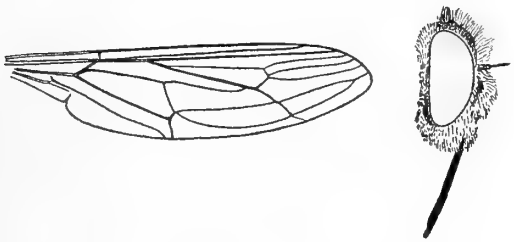

Fig. 17. *Rhynchocephalus sackeni* Will.

These are sometimes known as the Tangle-vein flies, because of the complex wing venation. The antennæ are small and the proboscis rather elongate; the female has a long ovipositor. The adults are flower frequenting and quite rare.

The early stages are not well known. The larvæ of one species are parasitic on a beetle.

230. **Rhynchocephalus sackeni** Will.

Forest Grove, VII-31 (Reeher) and VIII-12 (Lane); Mary's Peak; Corvallis, VII-19; Lewisburg, VII-5 (Black); Union Co., VII-18 (Black).

Family SCENOPINIDÆ

Fig. 18. *Scenopinus fenestralis* Linnæus

The name "window flies" is often applied to the members of this family because they are frequently found in houses on the windows. The adults are small, slender, and rather flattened; the wing membrane is smooth and there are two veins from the discal cell.

The larvæ are closely allied to those of the Therevidæ and are predaceous. The larvæ of *Scenopinus fenestralis* are found in rotten wood and fungi, and under carpets in houses, where they feed on the larvæ of the "moths".

231. **Scenopinus fenestralis** (Linn.)

Forest Grove, VIII-20 (Cole).

Family MYDAIDÆ

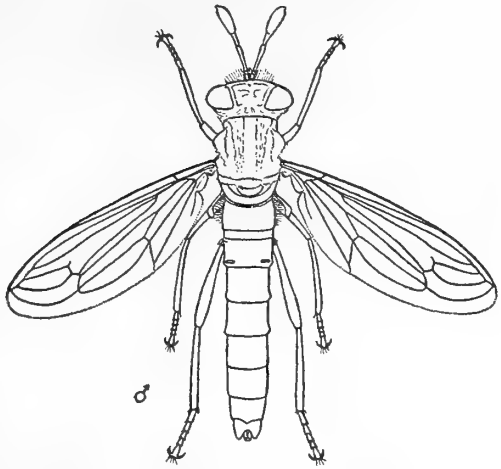

Fig. 19. *Leptomydas pantherinus* Gerst.

These flies resemble the Asilidæ in form. They are supposed to be predaceous but do not have mouth parts which would bear this out.

232. **Leptomydas pantherinus** Gerst.

Medford, VII; Hood River, VII-25 (Cole). Twelve males and one female taken at Hood River in one day. One male is an allotype in the collection of the California Academy of Sciences. The males were observed flying along the Mt. Hood Railway over sandy ground in the heat of the day. 1919, Proc. Cal. Acad. Sci., Ser. 4, col. IX, p. 228.

Family THEREVIDÆ

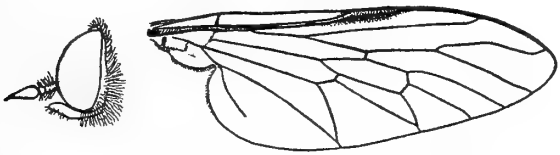

Fig. 20. *Psilocephala munda* Loew

Comstock called these "stiletto-flies" on account of their general form. The adults resemble robber flies but are not

as strongly built and the eyes do not protrude above the vertex; the abdomen of most species is slender and the wings of all the known American species have five posterior cells. They have been recorded as preying on other diptera, but must capture very small species as their mouth parts would not permit them to kill the prey selected by their more robust relatives, the robber flies. The larvæ are long and slender, with segments 1 to 6 so constructed that they appear to have twenty segments. They live in mold, rotten wood, and in the ground, and prey on other insects or their larvæ. The metamorphoses are not well known.

233. **Psilocephala aldrichii** Coq.

Burns, Mt. Jefferson, VIII-14 (Lovett); Hood River, VI-20 and Forest Grove, VII-12 (Cole).

234. **Psilocephala costalis** Loew

Hood River, VII-3 (Cole). A large number were taken on the foliage of strawberry plants.

235. **Psilocephala munda** Loew

Multnomah Falls, IX-30 (Cole).

236. **Psilocephala notata** Wied.

Hood River, VI-4 to VI-20 and Forest Grove, VII-12 (Cole).

237. **Thereva fucata** Loew

Crook Co., VII-14 (Lovett); McDermitt, Malheur Co., VIII-20 (J. R. Bunch).

238. **Thereva hirticeps** Loew

Horse Lake, VII-25 (Lovett).

239. **Thereva johnsoni** Coq.

Hood River, VII-5 (Cole); Forest Grove, V-20, bred from rotting debris in stump. (Rockwood).

240. **Thereva vialis** O. S.

Quite common in Hood River in June and early July;

collected mostly on sandy stretches along the Hood River on bright sunny days (Cole).

241. **Dialineura crassicornis** (Will.)

Common at Hood River, V-10 to VI-26 (Cole). The habits are like those of *Thereva vialis*. Williston described the species in the genus *Thereva*.

242. **Metaphragma planiceps** (Loew)

Burns, V-19 (B. G. Thompson).

Family BOMBYLIIDÆ

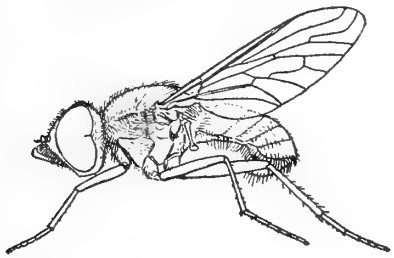

Fig. 21. *Epacmus nitidus* Cole, n. sp. Drawing of holotype.

The "bee-flies" are usually more or less covered with fur-like hair and look less like bees than some other flies; one group is furnished with a long proboscis. During the spring and summer they are often seen hovering in the air. They are flower feeders and creatures of the sunshine. Their flight is very quick, but consists of short dashes, and they are often seen resting on the ground or on low plants in the sun.

The larvæ are parasitic, predaceous, or inquilinous. Some are decidedly beneficial, being parasitic on injurious species.

243. **Spogostylum anale** (Say)

Forest Grove, IX-15 (Thompson and Cole). A few females were taken along Gale's Creek; the males, with numbers of other insects, were flying around some small pine trees in the afternoon sunshine.

244. **Spogostylum argentatum** Cole

Hood River, VI-20 to VII-5 (Cole). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 227. This species was collected around old burned pine logs, like many others of the genus.

245. **Spogostylum œdipus** (Fabr.)

Parkdale, Dee and Hood River in June (Cole).

246. **Spogostylum pauper** (Loew)

Parkdale and Hood River in June (Cole).

247. **Spogostylum stellans** (Loew)

Parkdale and Dee in June (Cole and Childs).

248. **Spogostylum varium** (Fabr.)

Mosier and Parkdale, VI (Cole); Hood River, VI-16 to VII-16 (Cole).

249. **Exoprosopa capusina** (Fabr.)

Hood River, VII-9 to VII 25 (Cole).

250. **Exoprosopa doris** O. S.

Hood River, VII-28 (Cole).

251. **Exoprosopa eremita** O. S.

Pendleton, VII-17 (Thomson).

252. **Dipalta serpentina** O. S.

Hood River, VII-28 to IX-20 (Cole).

253. **Villa**[16] **alternata** (Say)

This rather variable species is common in Oregon in July, but the typical form was not collected.

254. **Villa atrata** (Coq.)

Hood River, VII-25 (Cole). These big flies appear to be on the wing most of the time, flying around in large circles close to the ground.

[16]There is some difference of opinion as to the acceptance of this name for the old genus Anthrax as currently understood.

255. **Villa autumnalis** (Cole)

Colestin, VIII-1 (E. P. Van Duzee). This species, together with *fuliginosa* and *willistonii*, belongs to the subgenus *Pœcilanthrax*. 1917, Jl. N. Y. Ent. Soc., XXV, p. 71.

256. **Villa edititia** (Say)

Sherwood, VII-12.

257. **Villa eumenes** (O. S.)

Corvallis, V-20 and VI-3; Hood River, VI-12 (Cole).

258. **Villa fuliginosa** (Loew)

Hermiston, IX-18 (Rockwood).

259. **Villa fulviana** (Say)

Colestin, VII-31 and VIII-1 (E. P. Van Duzee); Corvallis, IX-10 (Cole).

260. **Villa inops** (Coq.)

Hood River, VI-7 and VII-10 (Cole).

261. **Villa lateralis** (Say)

Colestin, VII-1 (E. P. Van Duzee); Corvallis, Hood River, Forest Grove and the Dalles. Common in the summer.

262. **Villa macula** (Cole)

Hermiston, IX-18 (Reeher); The Dalles, VII (Moznette). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 226.

263. **Villa miscella** (Coq.)

Hood River, VII-10 (Cole). One specimen.

264. **Villa morio** (Linn.)

Hood River, VI and Parkdale, VII-2 (Cole). This common species has been bred from bees of the genera Anthophora, Megachile and Andrena.

265. **Villa sinuosa** (Wied.)

Hood River, VII-9 to X-1 (Cole); Colestin, VII-31 and Ashland, VIII-2 (E. P. Van Duzee).

266. **Villa vana** (Coq.)

Hood River, VII-25 (Cole); The Dalles; Lakeview (Thompson).

267. **Villa willistoni** (Coq.)

Crook Co., VIII-14 (Lovett).

268. **Lepidanthrax inauratus** (Coq.)

Hood River, VI-3 to VII-9 (Cole). Not uncommon.

269. **Pantarbes pusio** O. S.

Burns, VI-1 (Thompson).

270. **Bombylius aurifer pendens** Cole

Hood River, VI-2 to VI-20 (Cole). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 226.

271. **Bombylius metopium** O. S.

Corvallis, IV-29; Hood River, V-8 to VI-3 (Cole). Osten Sacken described only the male in his "Western Diptera." The description will apply to the female in most respects. In the female there is a tuft of silvery tomentum-like pile on each side of the frons, between the antennæ and the eye margin, which is very noticeable. Frons with short yellow pile and some long, black pile; pile of occiput whitish.

272. **Bombylius albicapillus** Loew

Large series taken at Hood River in early summer (Cole); Corvallis, V-15 to VI-3; Burns, V (Thompson). There is a great variation in the color of the pile and in the intensity of the wing markings. In some females the pile is almost entirely reddish, in others sordid, whitish. The amount of black pile on the abdomen varies. The silvery pile on the occiput of the male is noticeable at some distance in life. These flies were parasitic in the nests of a species of Halictus at Hood River.

273. **Bombylius lancifer** O. S.

Corvallis, VI-9; Whitman Nat. Forest; Buck Mt., VII-9; Hood River, VII-20 and Parkdale, VI-18 (Cole).

274. **Bombylius major** Linn.

Common at Hood River and Corvallis and probably in many other parts of Oregon. Corvallis, III-4 to IV-24. Latest date at Hood River, V-28 (Cole).

275. **Bombylius silvus** Cole

Parkdale, VI-8 (Cole). 1919, Proc. Cal. Acad. Sci. Ser., 4, IX, p. 225.

276. **Heterostylum robustum** O. S.

Lewisburg, VII-5 (Black).

277. **Anastœchus barbatus** O. S.

Hermiston, IX-18 (Rockwood). This form has in the past been made a synonym of *nitidulus* Fabr., the European species, but Cresson has recently compared European specimens with ours and believes it best to keep Osten Sacken's name. 1919, Proc. Acad. Nat. Sci. Phila., LXXI, p. 179.

278. **Systœchus oreas** O. S.

Common at Hood River and Forest Grove in June and July.

279. **Ploas amabilis** O. S.

Burns, V-19 (Thompson). A single specimen. This species undoubtedly occurs in eastern Oregon in large numbers as it is common in parts of arid, eastern Washington.

280. **Ploas atratula** Loew

Common at Hood River, V-10 to VI-22 (Cole).

281. **Ploas fenestrata** O. S.

Hood River, V-8 to VI-22 (Cole); Burns, V (Thompson).

282. **Ploas melanocerata** (Bigot)

Hood River, VI-2 to VI-26 and Mosier, VI-14 (Cole and Childs).

283. **Ploas nigripennis** Loew

Several specimens from Hood River, V-5 to VI-24 (Cole); Mary's Peak, V-16 (Lovett); Corvallis, V-4; Pamelia Lake, VII-19.

284. **Lordotus apicula** Coq.

Burns, VI-19 (Thompson).

285. **Lordotus gibbus** Loew

Lakeview, VIII-24 (Thompson); Freewater, IX-28; Hermiston, IX-18 (Rockwood).

286. **Acreotrichus americanus** Coq.

Hood River, V-10 (Cole).

287. **Eclimus celer** Cole

Parkdale, VI-18 (Cole). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 224.

288. **Eclimus lotus** Will.

Quite common at Hood River, VI-5 to X-1 (Cole). Females were collected around old burned logs and lumber piles. Like many other bombylids they will alight in a certain place in the sunlight, and, if frightened, will keep returning to the same spot.

Apparently *auratus* Will. is the same as this species. Williston described both species on the same page (Kansas Univ. Quarterly, vol. 2, No. 2), but *lotus* has at least paragraph priority. The type of *lotus* was a male specimen from California; *auratus* was described from two females from the state of Washington, and might easily be thought another species. The female is much brighter colored than the male, unrubbed specimens being almost entirely covered with golden tomentum on the dorsum of the thorax and abdomen. There is considerable variation in size in the species.

289. **Eclimus luctifer** (O. S.)

Parkdale, VI-18 (Cole); Hood River, VII-5 and Forest Grove, VII-8 (Cole); Joseph; Cascadia, VII-21. Several

specimens of what we take to be this species were collected at Hood River; some are quite small. The wings are infuscated and the anal angle much reduced. The male has traces of golden tomentum above, and perfect specimens of females are nearly covered above with these scales as in *E. lotus*. This species is usually much smaller than *lotus*, but is very near it.

290. **Eclimus magnus** (O. S.)

Forest Grove, VI-3 to VI-18 (Cole and Lane); Joseph. Allotype described, 1919, Proc. Cal. Acad. Sci. Ser. 4, IX, p. 225.

291. **Eclimus marginatus** (O. S.)

Hood River, VI-2 to VI-24 (Cole).

292. **Eclimus muricatus** (O. S.)

Hood River, VI-12 (Cole); Dee and Parkdale in June (Cole and Childs); Grant Co. This big black species was collected on old burned logs.

293. **Eclimus sodalis** Will.

Mosier, VI-14 and Dee, VI-17 (Cole). Three female specimens agree very well with the description of this species. One specimen from Mt. Jefferson, VIII-1 (Lovett), has the pile of the occiput whitish and not yellowish; halteres with a blackish knob; pile of thorax, pleura and pectus white. The base of the third antennal joint is rather broad.

294. **Epacmus sp.**

Mosier, VI-14 (Cole). A single female of an undescribed species was taken on the same day with the new species described below. It is a very distinct species, but until the male is collected it will not be described.

295. **Epacmus nitidus** Cole, new species

Male: Length 6 mm. Black, with yellow tomentum and pile. The occiput and cheeks dull grayish black with some yellowish and white tomentum and short yellow pile above that barely reaches the cheeks. Proboscis black and pro-

jecting beyond the oral margin about the length of the labellæ; palpi yellow with short yellow hairs. Frontal triangle and face pruinose, with short yellow pile except at apex of the triangle, the pile of the oral margin longer. Antennæ black, the styliform portion of the third joint about as long as the thick basal portion. Eyes separated by less than width of front ocellus.

Thorax shining black with yellow and white tomentum and faint indications of three white vittæ. Pile and bristles yellowish. Scutellum rounded, shining black, and bare except for a basal line of orange-yellow scales; the scales just in front of the scutellum obscuring the ground color. Pleura and coxæ densely gray pollinose with some yellowish and white pile. Femora black except the yellowish tip; the tibiæ reddish yellow; first three joints of tarsi yellowish, the last two brown. Wings hyaline; subcostal cell yellow, the costal and first vein yellowish brown, the rest blackish. Halteres yellow. Abdomen shining black with yellowish and white scales, denser at the bases of the segments. Pile at sides of first segment erect, whitish, bristle-like, the rest of the pile sparse and whitish. Venter densely covered with white tomentum and white pile. Most of genitalia black, more or less yellow below.

Female: Much like the male. Proboscis projecting almost half its length beyond the oral margin. The upper half of frons shining black with a few short black hairs; lower half pruinose and yellow pilose, the shining black reaching down a little on the sides (see fig. 21). Last abdominal segment laterally compressed, with a fringe of short golden pile.

Holotype, male, No. 833, and *allotype,* female, No. 834, Mus. Calif. Acad. Sci.; F. R. Cole, collector, June 14, 1917. These types are on the same pin and were taken in coitu.

Type locality, Mosier, Oregon.

This species is near *E. pallidus* Cresson, but has a long antennal style; most of the wing veins are blackish, the scutellum not emarginated and no brown tomentum on abdomen. In *E. modestus* the lower part of the face is polished.

296. **Aphœbantus borealis** Cole, new species

Male: Length 6 mm. Black, shining in ground color. Head black, the proboscis black and not projecting beyond the oral margin; palpi yellow. Occiput pruinose above with short yellow pile and yellowish scales. Antennæ black, the styliform portion of third joint about as long as the thickened basal portion.

Thorax shining black with white and yellow tomentum and yellow pile. Scutellum with yellowish tomentum at base and tip, the rest bare and shining black; bristles of thorax and scutellum reddish. Pleura gray pollinose with some whitish scales near the center; whitish pile above front coxæ, yellowish along dorso-pleural suture.

Abdomen black, thickly covered with brownish yellow tomentum above, white on first segment and posterior margin of second. Long, erect, whitish pile at sides of first segment. Venter with whitish scales not obscuring ground color. Genitalia rather large, about one-third as long as the rest of the abdomen, black, yellowish on the sides. Pile above on genitalia sparse and rather long, shorter below. Legs white and yellow tomentose, hind femora with several short bristles but no long hairs below. Femora black except tip, the tibiæ and tarsi reddish. Halteres yellow. Wings hyaline, the apical two-thirds of subcostal cell yellowish.

Holotype, male, No. 835, Mus. Calif. Acad. Sci.; F. R. Cole, collector, June 25, 1917.

Type locality, Hood River, Oregon.

Of this species a single specimen was taken; it runs to couplet 20 in Coquillett's table of species (Trans. Amer. Ent. Soc., XXI, p. 105), and there the characters do not apply as the hypopygium is not "small and not more than half as long as the abdomen."

297. **Aphœbantus peodes** O. S.

Hood River, VI-3 (Cole). Described from Mexico.

298. **Geron senilis** (Fabr.)

Hood River, VII-25 (Cole).

299. **Rhabdopselaphus sigma** (Coq.)

Dee, VI-17 (Cole).

300. **Toxophora maxima** Coq.

Hood River, VI-13 to IX-4 (Cole).

Family ASILIDÆ

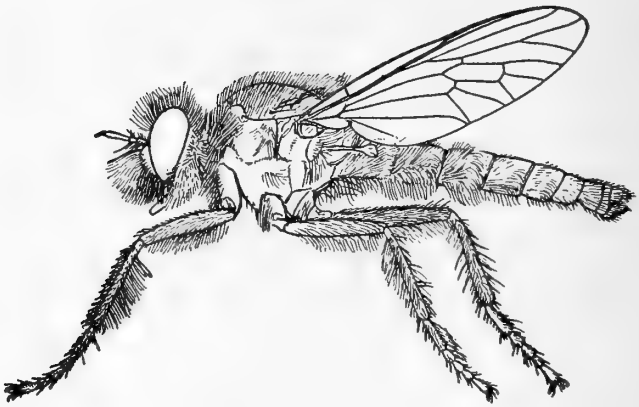

Fig. 22. *Cyrtopogon thompsoni* Cole, n. sp. Drawing of holotype.

The robber-flies vary in size from one-third of an inch to two inches in length. A few are bright colored, but the majority of the species are sober gray with black markings. The head is short, the eyes widely separated in both sexes and bulging out; the body is more or less bristly in all the species.

These flies are very savage and catch much of their prey in mid-air, even killing other asilids. Wasps, moths and even large grasshoppers are pounced upon, the choice of the victims depending upon the size of the brigand. Certain genera seem to prey on certain orders of insects. The larvæ are generally beneficial, as probably all prey upon other insect larvæ, either in the ground or in rotten wood.

301. **Leptogaster aridus** Cole

Hood River, VII-17 (Childs); Forest Grove, VII-12 (Cole). 1919, Proc. Cal. Acad. Sci. Ser. 4, IX, p. 229.

302. **Stenopogon breviusculus** Loew

Corvallis, VI-30; Ione, VII-22.

303. **Stenopogon californiæ** (Walk)

Mackenzie Ridge, alt. 6,000 feet, VIII-1; Detroit, VII-11 and Burns (Bridwell); Parkdale, VI-18 (Cole); High Ridges, 6,000-8,000 feet in Cascade Mts., Marion Co., VIII-1. In these last specimens the thorax is almost entirely covered with black pile, but otherwise they are typical.

304. **Stenopogon inquinatus** Loew

Hood River VI-7 (Cole); Bend, V-19.

305. **Stenopogon morosus** Loew

Ione, VII-22; Marysville, VII-15; Hood River, VII-9 (Cole).

306. **Docilonus simplex** Loew

Hood River, VI-5 to VI-26 (Cole).

307. **Dioctria media** Banks

Corvallis, VI-12 (Bridwell). 1917, Psyche XXIV, p. 118.

308. **Dioctria nitida** Will.

Large series from Rock Creek, near Corvallis, VI (Lovett).

309. **Dioctria sackeni** Will.

Listed from Mt. Hood by Dr. E. A. Back.

310. **Dioctria vertebrata** Cole

Parkdale, VI-12 (Cole). 1919, Proc. Cal. Acad. Sci. Ser. 4, IX, p. 230.

311. **Cyrtopogon anomalus** Cole

Hood River, VI-13 and Forest Grove, VII-10 to VIII-12 (Cole). 1919, Proc. Cal. Acad. Sci. Ser. 4, IX, p. 231.

312. **Cyrtopogon auratus** Cole

Joseph, Cascade Mts., Marion Co., VII-30. 1919, Proc. Cal. Acad. Sci. Ser. 4, IX, p. 230.

313. **Crytopogon bimacula** (Walk.)

One specimen, a male, Mt. Jefferson, VII-20 (Bridwell). This is considered an eastern species, but Dr. Back in his monograph mentions four males and two females collected on the peaks of Los Vegas Range, N. Mexico.

314. **Cyrtopogon dasylloides** Will.

Parkdale, VI-18 (Cole).

315. **Cyrtopogon dubius** Will.

Described from Oregon.

316. **Cyrtopogon infuscatus** Cole

Pamelia Lake, Mt. Jefferson, VII-12 (Bridwell). 1919, Proc. Cal. Acad. Sci. Ser. 4, IX, p. 233.

317. **Cyrtopogon leucozona** Loew

Joseph; Grant Co., VI-20 to VII-3.

318. **Cyrtopogon nebulo** O. S.

Subalpine regions on Mt. Jeffersons, VII-25 (Bridwell). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 232. Description of allotype.

319. **Cyrtopogon nugator** O. S.

Dee, VI-17 (Cole); Joseph, VII-17 (Chamberlin). The last mentioned specimens predaceous on Scolytidæ.

320. **Cyrtopogon perspicax** Cole

Hood River, VI-15 to VI-22 (Cole). Linn Co., V-24 (Lovett). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 233.

321. **Cyrtopogon præpes** Loew

Big Lake, VII-20 (Bridwell); Hood River, VI-13 (Cole); Burns, V (Thompson), a series which differs from the typical form in having the middle of the hind tibiæ red.

322. **Cyrtopogon princeps** O. S.

Subalpine regions of Mt. Jefferson, VII-20 (Bridwell); Horse Lake, 6,000 feet, VII-25; Mackenzie Ridge, 6,000 feet, VIII-1 (Bridwell). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 234.

323. **Cyrtopogon rejectus** O. S.

Dee, VI-17 and Parkdale, VI-12 (Cole).

324. **Cyrtopogon sudator** O. S.

Parkdale, VI-18 (Cole); Hood River, V-14 (Lovett).

325. **Cyrtopogon thompsoni** Cole, new species

Black, gray pollinose, with distinct black thoracic stripes; yellowish and white pile mixed with black.

Male: Length 11 mm. Face and frons whitish pollinose, the ground color more or less obscured. Black pile on sides of face on upper occiput next to eye margin and along lower occiput, cheeks, and oral margin. Pile of center of face and frons long and whitish. Antennæ black, the arista rather short and blunt; white pile below on first joint, a long black bristle under second joint. Occiput and head below with long, white pile.

Dorsum of thorax rather thinly gray pollinose, white pilose anteriorly and posteriorly, black across the middle. The two dorsal vittæ are narrow and distinctly separated, gray-black, somewhat shining, as are the side spots. The space in front of scutellum more or less destitute of pollen in this specimen. Scutellum slightly flattened on disk but with scarcely any pollen and thickly covered with long, erect, pale yellowish pile. Pleura gray pollinose, with some whitish pile on the meso- and sternopleura; a tuft of pile in front of the halteres. Halteres yellow. Whitish bristles on prescutellar callosities, the other thoracic bristles black.

Abdomen shining black with pollinose posterior borders, complete on second, narrowly interrupted on first, third, and following segments. Pile entirely whitish, longer and tuft-like on the sides of the first three but more or less covering all the segments, including the genitalia. Legs entirely black, including the ungues. Femora and basal two-thirds of tibiæ white pilose. First three joints of tarsi white pilose, especially long and tuft-like on the middle pair. Most of the bristles of the legs black but with a few white ones intermixed. Wings hyaline, the veins black; anterior cross vein a little before the middle of the discal cell.

Female: Resembling the male in many respects. White pile of face much thinner, the antennal arista a little longer and more slender and pointed. Thorax more thickly pollinose and the markings more distinct, the two dorsal vittæ interrupted some distance from the scutellum by gray pollen; pollen distinctly visible on the disk of the scutellum. Halteres reddish yellow. Second, third and fourth segments of abdomen with a complete pollinose band, the fifth interrupted, the following entirely shining black. Segments following the third with very short, sparse white pile.

Holotype, male, No. 836, and *allotype,* female, No. 837, Mus. Calif. Acad. Sci.; B. G. Thompson, collector, May 1919. These types are on the same pin and were taken in coitu.

Type locality, Burns, Oregon.

The species is quite a distinct one and is in the group which has the scutellum flattened and pollinose; it runs to couplet 17 in Back's synoptic table but is quite different from *evidens.*

326. **Cyrtopogon varipennis** Coq.

Parkdale, VI-8 (Cole). 1904, Proc. Ent. Soc. Wash. VI, p. 184.

327. **Lasiopogon bivittatus** Loew

Hood River, V-15 to VI-24 (Cole).

328. **Lasiopogon cinereus** Cole

Hood River, V-28 to IX-24 (Cole). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 229.

329. **Heteropogon ludius** (Coq.)

Lookingglass, VI-14 (Black).

330. **Heteropogon senilis** Bigot

Mt. Hood (Coquillett).

331. **Pycnopogon cirrhatus** O. S.

Hood River, VI-6, VII-7 and Mosier, VI-14 (Cole). This species is not a typical *Pycnopogon*. It has more the appearance of *Heteropogon*.

332. **Lestomyia sabulonum** (O. S.)

Burns, VI-1 (Thompson); Ashland, VIII-2 (E. P. Van Duzee); Mosier, VI-14 (Cole). The Mosier specimens vary somewhat from the typical form but the species is apparently very apt to show slight variations in chætotaxy and color.

333. **Cophura brevicornis** (Will.)

Hood River, VI-20 to VIII-1 and Forest Grove, VI to VII (Cole); Ashland, VIII-2 (E. P. Van Duzee). This species is not typical of the genus but as many of the other species in the genus are just as aberrant it may as well be left there.

334. **Cophura cyrtopogona** Cole

Dee, VIII-1 (Childs). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 236.

335. **Nicocles æmulator** (Loew)

Forest Grove, VI (Lane), only one specimen taken. A series collected at Hood River in May and June is very near this species. Only males were taken and these had only the last abdominal segment silvery. Possibly it will prove to be an undescribed species.

336. **Nicocles dives** (Loew)

Large series taken at Hood River in V, VI and VII (Cole and Childs). They have the usual habits of the genus, perching on the tips of dead branches or tall grass stems. From these watch towers they flash out on some unsuspecting little wayfarer whose fate has been written. The silvery tips of the abdomen of the males glitter in the sunlight and are visible some distance away. Aphids, among other small insects, are a part of their food.

337. **Nicocles rufus** Will.

Hood River, VI-5 (Cole). One female taken.

338. **Pogonosoma dorsata** (Say)

Mary's Peak, VII-1891; Sherwood; Santiam Nat. Forest, VIII-11.

339. **Laphria felis crocea** McAtee

Mt. Hood (H. K. Morrison). 1918, Ohio Journ. Science, XIX, p. 163.

340. **Laphria ferox** Will.

Corvallis (Lovett). J. S. Hine det.

341. **Laphria gilva** (Linn.)

Hood River, VI-16 (Cole).

342. **Laphria sadales** Walk.

Described from Oregon as *pubescens* by Williston. Parkdale, Dee, and Hood River in June (Cole); Corvallis, VII-7 (Lovett); subalpine regions on Mt. Jefferson, VII-12 (Bridwell).

343. **Laphria vivax** Will.

Corvallis, one specimen, collector unknown; Corvallis, VIII-18 (Lovett).

344. **Laphria vultur** O. S.

Hood River and Parkdale, VI-12 to VII-5 (Cole); Lava Lake, VII-25 (Lovett); Corvallis, V-19 to VIII-23; Big

Lake; Mary's Peak; Mt. Jefferson; Santiam Nat. Forest. These big flies are usually found on old pine logs in the sunlight and are very wary; they usually return to the same place however, after a rather abrupt and rapid flight. In some specimens the wings are much paler than in others.

345. **Laphria xanthippe** Will.

Horse Lake, VII-25 and Mt. Jefferson; Pamelia Lake, alt. 3,000 feet, VII-30 (Bridwell). McAtee has recently made this a variety of *felis* O. S.

346. **Dasyllis astur** Loew

Reported from Oregon by Williston.

347. **Dasyllis californica** Banks

Parkdale, VII-12 and Hood River, VI-6 (Cole); Pamelia Lake, Mt. Jefferson, VII-25 (Bridwell); Corvallis, V-29; Elk Beds, Mt. Hood, VIII-10 (Bridwell). 1917, Bull. Brookl. Ent. Soc., XII, p. 54.

348. **Dasyllis columbica** Walk.

Corvallis, V-11; Mt. Jefferson, VII-20 (Bridwell); Mary's Peak, VII-14 (Lovett).

349. **Dasyllis fernaldi** Back

Pamelia Lake, Mt. Jefferson, 3,000 feet, VIII-6 (Bridwell). 1904, Can. Ent., XXXVI, p. 290.

350. **Dasyllis sackeni** Banks

Corvallis, V-14 (Lovett); Colestin, VII-30 (E. P. Van Duzee). 1917, Bull. Brookl. Ent. Soc., XII, p. 54.

351. **Proctacanthus occidentalis** Hine

Corvallis, VII and VIII; Roseburg, VIII-19 (Black); Medford, VIII-25; Bend, V-19; Hood River, VII-25 (Cole). This species was predatory on grasshoppers at Hood River. 1911, Ann. Ent. Soc. Amer., IV, p. 159.

352. **Promachus princeps** Will.

Hood River, VII-2 (Cole).

353. **Tolmerus callidus** Will.

Described from Oregon and Washington. Bend, VI-10 (Thompson).

354. **Asilus affinis** Will.

Hood River, VII-7 (Cole). J. S. Hine det.

355. **Asilus auriannulatus** Hine

Mt. Jefferson, VIII-15 (Lovett); Parkdale, VI-12 (Cole). J. S. Hine det. 1909, Ann. Ent. Soc. Amer., II, p. 151.

356. **Asilus californicus** Hine

Forest Grove, IX-27 (Cole). J. S. Hine det. 1909, Ann. Ent. Soc. Amer., II, p. 164.

357. **Asilus mesæ** Tucker

Blitzen River, VII-6; Pamelia Lake, Mt. Jefferson, VII-19 (Bridwell). J. S. Hine det. 1907, Kans. Univ. Sci. Bull., IV, p. 92.

358. **Asilus nitidifascies** Hine

Mt. Hood (H. K. Morrison). 1908, Can. Ent., XL, p. 202.

359. **Asilus occidentalis** Hine

Hood River and Dee, VI-17 to VII-25 (Cole); Pamelia Lake, Mt. Jefferson, VII-16 (Bridwell); Mackenzie Ridge, VII-20; Cascade Mts., Marion Co. 1909, Ann. Ent. Soc. Amer., II, p. 147.

360. **Asilus willistoni** Hine

Brownsville, IX-11. Hine det. This is the same as the preoccupied name *angustifrons* Will.

Family DOLICHOPODIDÆ

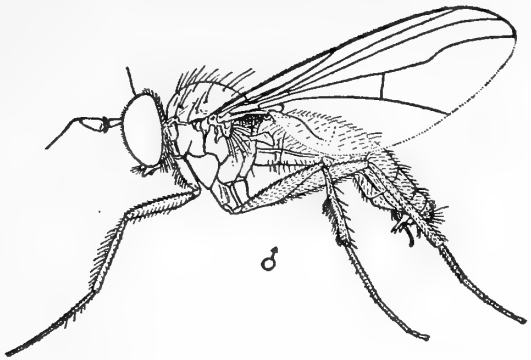

Fig. 23. *Argyra nigripes* Loew.

These flies are small and usually shining green in color but occasionally black or yellow. The tarsi are long and often ornamented in the males; these and the curiously modified claspers of the male genitalia furnish some of the best specific characters. The adults are slender and delicate and many are found about damp places in rank growth. They are predatory, darting over leaves or the surface of water in search of their prey.

Little is known of the early stages of American species. The larvæ have been recorded as predaceous on other larvæ and also as feeding in plant tissues. A great majority are aquatic, such as Dolichopus, Hydrophorus, and Campsicnemis.

361. **Sciapus pilicornis** (Aldr.)

Hood River, VI-2 and 20. (Cole). M. C. Van Duzee det. 1904, Trans. Amer. Ent. Soc., XXX, p. 282 (Psilopodinus.)

362. **Chrysotus choricus** Wheeler

Forest Grove, VI-2 (Cole).

363. **Chrysotus discolor** Loew

Narrows, VII-1.

364. **Chrysotus longimanus** Loew

Hood River, VI-1 and VI-5 (Cole); Narrows, VII-1.

365. **Campsicnemis claudicans** Loew

Forest Grove, V-5 to VI-6 and Hood River, IX-5 (Cole).

366. **Argyra albiventris** Loew

Forest Grove, V-5 to V-20 (Cole). The species was described from Sitka, Alaska, many years ago and, according to M. C. Van Duzee, who confirms my determination, has not been recorded since. It differs from *robusta* Johnson in several characters.

367. **Argyra nigripes** Loew

Hood River, VI-8 and VI-24, two males (Cole). The type was a single male, damaged by mould, which was collected at Sitka, Alaska, by Sahlberg, the description, however, is a very good one. The middle tibiæ are brownish yellow below, noticeably curved and enlarged near the middle and again near the tip; on the outside of the median enlargement is a cluster of rather long bristles. The few bristles on the underside of the front metatarsi are quite long and very slender. The genitalia are blackish brown and as in other species of the genus posses good specific characters.

368. **Sympycnus pugil** Wheeler

Hood River, IX-27 to X-11 (Cole).

369. **Nothosympycnus vegetus Wheeler**

Hood River, V-9 (Cole). M. C. Van Duzee det.

370. **Medeterus viduus** Wheeler

Hood River, VI-2 (Cole); Corvallis.

371. **Hydrophorus innotatus** Loew

Recorded from Oregon by Aldrich.

372. **Hydrophorus pensus** Aldr.

Forest Grove, VII-16 to IX-28 (Cole). A common species. 1911, Psyche, XVIII, p. 68.

373. **Hydrophorus philombrius** Wheeler

Hood River, VI-2 and Forest Grove, IX-27 (Cole).

374. **Scellus monstrosus** O. S.

Series taken at Burns in June (Thompson). The specimens do not tally exactly with the original description, but Dr. Aldrich, who examined specimens of this and the following species, is certain of the determination. The spoon-shaped appendages of the male genitalia are dark brown with a tuft of black hair. The appendage on the inner side of the base of the fore tibia ends in a short spine and has about seven short hairs on it. This species is very near *avidus*.

375. **Scellus vigil** O. S.

Corvallis, V-24; Forest Grove in May and September (Cole). These specimens lack the long white pile on the hind femora which Aldrich mentions in his table of species (1907, Ent. News XVIII, p. 136). The species is very close to, if not identical with, *filifer* Loew. Only females were taken in September, although about seventy specimens were collected, and these were darker and larger than the earlier forms. All were collected on the ground, many by sweeping over grass.

376. **Liancalus limbatus** V. D.

Mary's Peak, VI, one specimen collected. 1917, Ent. News, XXVIII, p. 127.

377. **Dolichopus aurifex** V. D.

Newport, VIII-13 (Aldrich). 1921, U. S. Nat. Mus., Bull. 116, p. 225.

378. **Dolichopus cavatus** V. D.

Hood River, VI (Cole); Corvallis. 1921, U. S. Nat. Mus., Bull. 116, p. 227. M. C. Van Duzee det.

379. **Dolichopus celeripes** V. D.

Hood River, VIII-2 (Childs). 1921, U. S. Nat. Mus., Bull. 116, p. 244. Two specimens collected.

380. **Dolichopus compactus** V. D.

Hood River, VII-4 (Cole). M. C. Van Duzee det. 1921, U. S. Nat. Mus., Bull. 116, p. 206.

381. **Dolichopus convergens** Aldr.

Described from Oregon.

382. **Dolichopus coquilletti** Aldr.

Forest Grove, VIII-29 (Creel); Hood River, VIII-9 (Aldrich).

383. **Dolichopus crenatus** (O. S.)

Hood River, VII-5 to X-3 and Forest Grove, VI-3 (Cole); Corvallis, VI-15 (Lovett). Very common in some localities.

384. **Dolichopus duplicatus** Aldr.

Hood River, IX-27 (Cole); Salem, VII-4 (Melander); Corvallis VII (Aldrich).

385. **Dolichopus hastatus** Loew

Collected on Mt. Hood (Aldrich).

386. **Dolichopus obcordatus** Aldr.

Hood River, VI to IX (Cole). Common in 1917.

387. **Dolichopus occidentalis** Aldr.

Hood River, VI-30, and Salem, VII-4 (Melander).

388. **Dolichopus paluster** M. &. B.

Hood River, VI-3 to IX-5 (Cole). M. C. Van Duzee det.

389. **Dolichopus ramifer** Loew

Common at Hood River, June to October (Cole).

390. **Dolichopus socius** Loew

Hood River, VI-3 and 4 (Cole). M. C. Van Duzee det.

391. **Dolichopus tenuipes** Aldr.

Hood River, IX-24 to X-11 (Cole); Corvallis, VI-1 (Cole).

392. **Dolichopus variabilis** Loew

Hood River, VII-20 (Cole).

393. **Tachytrechus olympiæ** (Aldr,)

Hood River, VI-3 (Cole), M. C. Van Duzee det.

394. **Tachytrechus sanus** O. S.

Hood River, VI-21 (Cole), M. C. Van Duzee det.

395. **Pelastoneurus vagans** Loew

Forest Grove, IX-27 and Hood River, X-26 (Cole), M. C. Van Duzee det.

396. **Pelastoneurus occidentalis** Wheeler

Corvallis, VII-12 (Cole), M. C. Van Duzee det.

Family EMPIDIDÆ

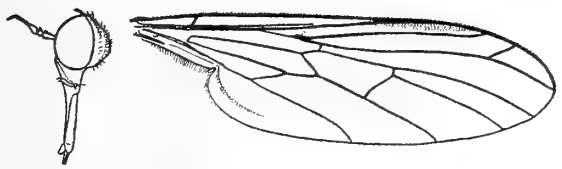

Fig. 24. *Empis poplitea* Loew.

The family is a very large one and there is a great variety in form and wing venation. The prevailing colors are dull, most of them brown, gray, or black. The mouth parts are usually long and beak-like. The adults congregate in swarms under trees or near shrubs and about brooks and dance up and down in the air, hence the name "dance-flies." They are predaceous, even cannibalistic, the female being "more deadly than the male." Many of the flies visit flowers and some species have very interesting habits. They perform quaint courtship dances and carry little balloon like veils or

nets in some of their aerial maneuvers. The larvæ are found under leaves and decaying vegetable matter and are probably carniverous. Some species are aquatic or semi-aquatic. The species listed below were determined by Dr. A. L. Melander except where otherwise indicated.

397. **Platypalpus æqualis** Loew

Hood River, VI-3 (Cole).

398. **Platypalpus crassifemoris** Fitch

Hood River, VI-3 (Cole).

399. **Tachypeza inusta** (Mel.)

Viento, VII-1 (Melander).

400. **Leptopeza disparilis** Mel.

Forest Grove, VI-2 (Cole).

401. **Ocydromia glabricula** (Fall.)

Forest Grove, V-20 and VI-2 (Cole).

402. **Empimorpha barbata** (Loew)

Hood River, V-7 and Forest Grove, III, IV and V (Cole). Very common in April and May, especially around the flowers of Oregon grape.

403. **Empimorpha comantis** Coq.

Corvallis, IV-30.

404. **Empis aldrichii** Mel.

Rock Creek near Corvallis, VI-6 (Cole).

405. **Empis canaster** Mel.

Reported from Oregon by Melander.

406. **Empis poplitea** Loew

Hood River, V-5, and Forest Grove in May (Cole). Common, and often in swarms in the mating season. As in *Empimorpha barbata* the males carry their prey near the females as a lure.

407. **Hilara atra** Loew
Forest Grove, V-20 (Cole), Cole det.

408. **Brachystoma occidentalis** Mel.
Forest Grove, VI-13 (Rockwood). Cole det.

409. **Rhamphomyia amplicella** Coq.
Corvallis, IV; Forest Grove, IV-12 (Cole). Cole det.

410. **Rhamphomyia corvina** Loew
Forest Grove, IV-4 (Cole). Cole det.

411. **Rhamphomyia curvipes** Coq.
Corvallis, VI-3.

412. **Rhamphomyia nigricans** Loew
Forest Grove, III-20 (Cole). Cole det.

413. **Rhamphomyia sudigeronis** Coq.
Hood River, VI-8 (Cole).

414. **Anthalia stigmalis** Coq.
Corvallis, VI-2 (Cole).

Family PLATYPEZIDÆ

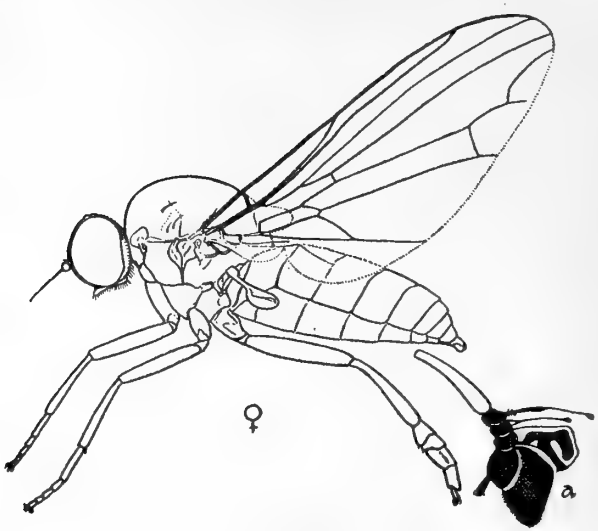

Fig. 25. *Calotarsa insignis* Aldr. a. Drawn from male.

In the "flat-footed flies" the posterior tarsi are broad and flattened, especially in the males. The wings are proportionately large. They are quick little flies and are often seen darting around on leaves, active in the shade and at times seen hovering over foliage about sundown. The larvæ live in mushrooms and other fungi.

415. **Agathomyia lutea** Cole

Parkdale, IX-5 (Cole). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 238.

416. **Platypeza abscondita** Snow

Hood River, VI-8 (Cole).

417. **Platypeza cinerea** Snow

Hood River, X-30 (Cole).

418. **Platypeza polyporus** Willard

Large series from Corvallis (Moznette). 1914, Psyche, XXI, p. 167.

419. **Calotarsa insignis** Aldr.

Hood River, X-11 (Cole). Thirty-five females of this remarkable fly were taken, but no males were seen. According to Aldrich this is the first record since the discovery of the species at Stanford University, California.

Family LONCHOPTERIDÆ

Fig. 26. *Lonchoptera lutea* Panzer.

Very small flies with pointed wings, commonly known as "spear-winged flies." When at rest the wings are folded flat, one over the other, on the abdomen. The venation alone will distinguish them from all other families and suggests that of the Psychodidæ. They are found in grass along streams and the individuals are quite common. There is only one genus in the family and very few species, three occurring in North America. Little is known of their habits. The larvæ are found on the ground under vegetable material.

420. **Lonchoptera lutea** Panz.

Common everywhere. Hood River, VI-19 to X-26 (Cole). Lundbeck in "Diptera Danica" said that only six males of *furcata* Fallén were known and in this species the males are about as rare. The females undoubtedly reproduce parthenogenetically.

Family PHORIDÆ

Fig. 27. *Chætoneurophora variabilis* Brues.

Small, usually dark colored, flies with large, broad wings and a peculiar venation. The thorax is large and the head small. They are commonly seen running about on leaves and on windows in houses; occasionally they swarm in the air. The larval habits are remarkably varied; some live in decaying animal and vegetable matter and others are true entoparasites.

421. **Phora velutina** Meig.

Hood River, V-20 to IX-5 and Forest Grove, VI-5 (Cole).

422. **Hypocera flavimana** Meig.

Forest Grove, III-28 (Cole), Malloch det. Previously recorded only from the east.

423. **Apiochæta borealis** Mall.

Forest Grove, IV-4, 10 (Cole). 1912, Proc. U. S. Nat. Mus., XLIII, p. 488. Recorded from B. C.

424. **Apiochæta rufipes** (Meig.)

Forest Grove, III-30 to V-14 (Cole).

425. **Conicera aldrichii** Brues

Forest Grove, III-30 to IV-20 (Cole).

426. **Chætoneurophora**[17] **spinipes** Coq.

Forest Grove, IV-4 (Cole); Corvallis, I-26 (Chamberlin).

[17] 1912, Proc. U. S. Nat. Mus., XLIII, p. 422.

427. **Chætoneurophora variabilis** Brues

Series of specimens collected at Corvallis, with no other data. 1908, Jl. N. Y. Ent. Soc. XVI, p. 199.

428. **Trupheoneura**[18] **fratercula** Brues

Hood River, X-30 (Cole). Doubtfully placed here, the third vein thickened more as in *pachyneura* Loew.

[18] 1909, Journ. Nat. Hist. Soc. Glasgow, I, p. 27.

Family PIPUNCULIDÆ

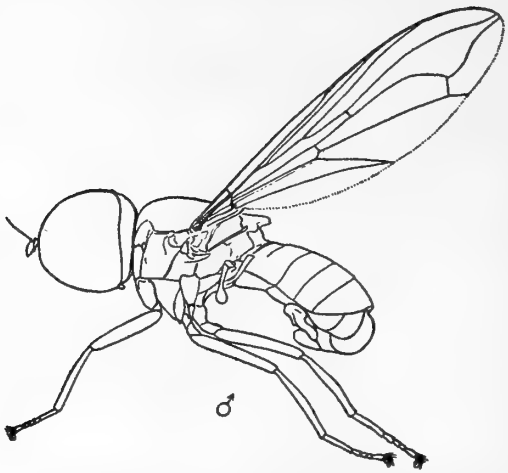

Fig. 28. *Pipunculus atlanticus* Hough.

Small flies with rather large heads composed almost entirely of the compound eyes. The wings are long and the venation like that of the Conopidæ. The body is usually almost bare of pile. The adults can be taken by sweeping plants and grass. Some are known to be parasitic in Jassids in the larval stages.

429. **Chalarus spurius** (Fall.)

Hood River, VII-28 (Cole).

430. **Pipunculus**[19] **atlanticus** Hough

Hood River, VI-6 to VII-28 (Cole). These specimens cannot be separated from the eastern species. They are the "slightly smaller" form with blackish antennæ mentioned by Cresson in his paper on this group.

[19] In this large genus there are evidently many undescribed species in the west. There is not sufficient material at present to make sure of some of the species collected in Oregon; at least six forms were taken at Hood River.

431. **Pipunculus confraternus** Banks

Hood River, IX-29 (Cole). One female taken. 1910, Trans. Amer. Ent. Soc., XXXVI, p. 285.

432. **Pipunculus proxima** Cress.

Hood River, VI-3 (Cole). 1910, Trans. Amer. Ent. Soc., XXXVI, p. 318.

433. **Pipunculus similis** Hough

Hood River, VI-4 (Cole).

Family SYRPHIDÆ

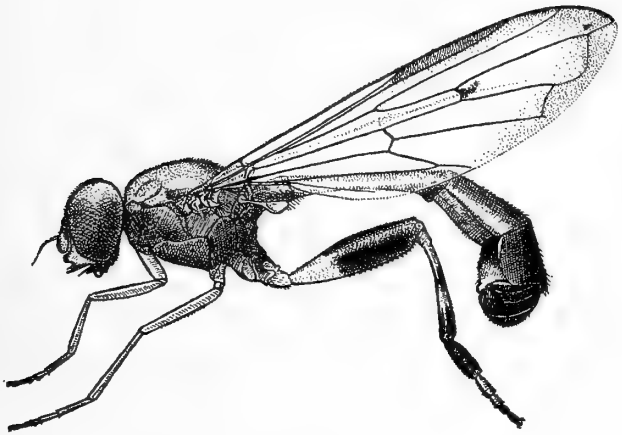

Fig. 29. *Sphegina punctata* Cole, n. sp. Drawing of holotype.

The adults are usually of moderate size and bright colors, black and yellow predominating. One of the distinguishing characteristics of the family is a thickening of the wing membrane, appearing as a spurious longitudinal vein. Over 700 described species occur in North America.

The more common forms of the genus Syrphus and its near relatives frequent fields and gardens, hovering here and there about the blossoms. Mimicry is well developed among the less typical forms, some are almost bare and mimic wasps, others are hairy and mimic bees. The adults feed

upon the pollen and nectar of flowers and are of no economic importance.

The larvæ are typically slug-like in appearance. As a group they are considered beneficial and feed upon plant lice. As with the adults there is great variation in appearance among the less typical forms. In the genus Microdon the larvæ resemble molluscs and live in the nests of ants. Others are found in the nests of bumblebees and wasps. A large group, termed rat-tailed larvæ, have a slender posterior prolongation with terminal spiracles. These forms may live in stale pools of water or tunnel deeply into the sap or decay of trees. A few forms are injurious, tunneling into live bulbs and woody plants. These include such forms as the narcissus bulb maggot, *Merodon equestris;* the onion maggot, *Eumerus strigatus;* and *Chilosia alaskensis,* causing black check in Western Hemlock.

434. **Microdon cothurnatus** Bigot

Hood River, V-19 to 21 (Cole). Found mostly in an ant's nest under the bark of an old pine log, ten adults being taken and a number of pupæ. There is reason to believe that species of Microdon return to the old nest year after year and this certainly appeared to be the case here, as some of the old pupa cases had been there three or four years. The type of this species was taken on Mt. Hood.

435. **Microdon marmoratus** Bigot

Hood River, VI-14 (Cole); Mosier, VI-16 (Cole and Childs).

436. **Microdon piperi** Knab

Corvallis; Hood River, VI (Cole); Mt. Jefferson, VIII. Listed from Oregon by Williston as *tristis* Loew. On March 10, 1915, Childs collected larvæ in a colony of ants, under heavy bark of an old fir stump.

437. **Chrysotoxum derivatum** Walk.

Mt. Jefferson; Mary's Peak, VI-VIII (Lovett).

438. **Chrysotoxum ypsilon** Will.

Mary's Peak, VII-14 (Bridwell); Lakeview, VIII-18 (Thompson).

439. **Chrysogaster bellula** Will.

Mt. Jefferson, VIII (Bridwell).

440. **Chrysogaster lata** Loew

Williston records from Oregon.

441. **Chrysogaster parva** Shannon

Hood River, V-15 to VI-6 (Cole). 1916, Proc. Ent. Soc. Wash., XVIII, p. 104.

442. **Chrysogaster pulchella** Will.

Hood River, VI-17 (Cole).

443. **Chrysogaster sinuosa** Bigot

Hood River, VI-3 (Cole); Forest Grove, V-11 (Lovett).

444. **Chrysogaster stigmata** Will.

Pamelia Lake, VII-24 (Bridwell); Hood River, VI-3 and Forest Grove, IV-12 (Cole).

445. **Pipiza**[20] **femoralis** Loew

Hood River, VII-5 (Cole).

446. **Pipiza macrofemoralis** Curran MS.

Hood River, VI-8 (Cole).

[20] The group Pipizini is a difficult one, individuals varying considerably, having few outstanding characters sufficiently constant to be of service in establishing genera. Particularly in the females the characters for differentiation are more imaginary than real. In collecting where material in this group is plentiful, it is frequently possible to obtain individual females, which might provisionally be placed in each of the four genera, associating with males specifically of one form. It is our belief that a closer study will show this group to be in a transitional stage because of changes in food habits of the larvæ; the adults still mating more or less indiscriminately.

Mr. C. Howard Curran of Ontario, Canada, who has undertaken the very laudable task of straightening out this group, has kindly determined our Oregon material and his classification is used in cataloguing these forms. Mr. Curran's paper will appear in the succeeding number of these Proceedings.

447. **Pipiza oregona** Lovett

Hood River, V-8 (Cole). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 246.

448. **Heringia californica** Davidson

Hood River, V-25 to VI-21 (Cole).

449. **Heringia cumuta** Curran MS.

Hood River, V (Cole).

450. **Cnemodon auripleura** Curran MS.

Hood River, VI-16 and Forest Grove, V (Cole); Corvallis, VI-14 (Lovett).

451. **Cnemodon corvallis** Curran MS.

Hood River, VI-16 and Forest Grove, IX-30 (Cole).

452. **Cnemodon lovetti Curran** MS.

Horse Lake, 6,000 ft., VII (Bridwell).

453. **Cnemodon pisticoides** Will.

Mackenzie R. ridge, in Cascades, 6,000 ft., VIII; Mary's Peak.

454. **Cnemodon placida** Curran MS.

Forest Grove, V-25 (Cole).

455. **Cnemodon rita** Curran MS.

Rock Creek, VII-14 (Lovett).

456. **Cnemodon sinuosa** Curran MS.

Forest Grove, V-25 (Cole).

457. **Paragus angustifrons** Loew

Corvallis (Bridwell); Forest Grove (Cole); Hood River, VI to VII (Cole).

458. **Paragus bicolor** (Fabr.)

Corvallis, V to VI (Lovett); Forest Grove, V (Cole).

459. **Paragus tibialis** (Fall.)

Forest Grove, VII and Hood River, V-16 (Cole).

460. **Chilosia aldrichi** Hunter

Mary's Peak, VI-14 (Lovett). Two male specimens, placed here provisionally. The abdomen is not "everywhere shining", but with subopaque cross band on hind margins of second and third segments, not reaching lateral margins and produced slightly forward in the center. Pile of disc short golden, longer golden on the margins. Scattering elongate bristle-like hairs on postalar callosities and on margin of scutellum. Otherwise fits description.

461. **Chilosia baroni** Will.

Mary's Peak, V-9 (Currey).

462. **Chilosia borealis** Coq.

Corvallis, IV-15. Doubtfully assigned here. Fits description except pile of eyes white. Length 8.5 to 9 mm.

463. **Chilosia chalybescens** Will.

Corvallis (Lovett).

464. **Chilosia chintimini** Lovett, new species.

Eyes pilose, arista nearly bare; color black throughout; face, legs, halteres and pile black; wings dark smoky, veins black. Length 11 mm.

Male: Face black shining with fairly abundant, moderately elongate, pile between tubercle and groove; indistinct, short, golden pile along groove. Face not produced, but slightly concave from antennæ to prominent tubercle, deeply concave between tubercle and prominent oral margin. Cheeks black, subshining, with golden pile. Frontal triangle strongly swollen, a deep median impression, pile coarse, elongate, black; vertical triangle small, black; ocelli brown; pile coarse, heavy, elongate, black. Antennæ small and brown; first two segments shining dark mahogany, third rounded, thin, coffee color. Arista black, longer than antennæ, thickened and briefly pilose on basal third. Eyes evenly and moderately elongate brown-pilose.

Thorax and scutellum shining black, scutellum with a hint of mahogany brown. Pile throughout elongate, black, coarser and shorter on pleura, spines everywhere absent. On humeral angles with small, half-concealed, areas of whitish pubescence.

Abdomen opaque black on disc, subshining along margins, pile moderately elongate, black, but with shorter, inconspicuous, brown pile in rows across disc of first three segments.

Legs black with black pile, briefly short golden pilose on under-surface of tibiæ and tarsi. Wings dark, smoky throughout; veins black. Tegulæ light with light yellow pile; halteres deep brownish black, a hint of gray on knob.

Holotype, male, No. 838, Mus. Calif. Acad. Sci. A. L. Lovett, collector, June 19, 1919. *Paratype,* same data, in collection of A. L. Lovett.

Type locality, Mary's Peak, Oregon.

Near *ferruginea* and *lasiophthalma* in size and length of pile. The uniformly attractive black color readily separates it.

465. **Chilosia ferruginea** Lovett

Corvallis, IV-14 (Chamberlin); Mary's Peak, III-30 (Lovett). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 238.

466. **Chilosia hoodiana** Bigot

Hood River, V-8 (Cole).

467. **Chilosia lævis** Bigot

Hood River, V-20 (Cole); Mary's Peak, VI-26; Lebanon, V-18 (Lovett).

468. **Chilosia lasiophthalma** Will.

Corvallis, IV (Lovett).

469. **Chilosia lugubris** Will.

Hood River V and VI (Cole).

470. **Chilosia nigripennis** Will.

Mt. Jefferson, VII-15 (Bridwell). Bigot also reported it from Mt. Hood as *Cartosyrphus infumatus*.

471. **Chilosia nigrovittata** Lovett

Corvallis, IV-22 (Neilson). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 239.

472. **Chilosia occidentalis** Will.

Mary's Peak III-30 (Black).

473. **Chilosia nigro-cœrulea** Lovett

New name for *pacifica* Lovett. Lava Lake, VII-15 (Lovett); Mt. Jefferson, VII (Bridwell); Corvallis, V-17. 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 240.

474. **Chilosia pallipes** Loew

Mt. Jefferson, Horse Lake, VII-25 (Bridwell); Mt. Jefferson, VIII-1; Mary's Peak, V to VII (Lovett). Occurs at lower altitudes in scattering numbers. A very common form in higher altitudes in midsummer in blossoms of Hellebore.

475. **Chilosia parva** Will.

Described from Oregon.

476. **Chilosia petulca** Will.

Mary's Peak, VI (Lovett).

477. **Chilosia signatiseta** Hunter

Hood River, V-5 (Cole).

478. **Chilosia sororcula** Will.

Mary's Peak, V-9 (Currey).

479. **Chilosia versipellis** Will.

Hood River, V-19 (Cole).

480. **Chilosia willistonii** Snow

Corvallis (Bridwell); Hood River, V-8 (Cole).

481. **Myiolepta bella** Will.

Mt. Jefferson; Mary's Peak; Horse Lake, 3,000 to 6,000 feet, VI-VIII (Lovett). Oregon is type locality.

482. **Myiolepta varipes** Loew

Corvallis, V-26. Bigot described it from Mt. Hood as *lunulata.*

483. **Pyrophæna granditarsus** Forst.

Hood River, V and VI (Cole). Common in marshy lands near Hood River, flying about plants of *Equisetum.*

484. **Platychirus æratus** Coq.

Mt. Jefferson, VIII-1 (Lovett). Doubtfully referred here; apparently agrees, except that legs are decidedly lighter in color and pile on face not especially heavy.

485. **Platychirus frontosus** Lovett

Corvallis, V-5 (Nichols); Mary's Peak, III-19 (Lovett). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 247.

486. **Platychirus hyperboreus** (Staeg.)

Corvallis; Alsea Valley, IV to VII (Lovett).

487. **Platychirus peltatus** (Meig.)

Hood River and Parkdale, V and VI (Cole).

488. **Platychirus quadratus** (Say)

Hood River (Cole); Mary's Peak, III-30 (Black). Common at Hood River.

489. **Melanostoma angustatum** Will.

Pamelia Lake, 3,000 ft., VII-27 (Bridwell).

490. **Melanostoma ambiguum** (Fall.)

Hood River, VII-25 (Cole).

491. **Melanostoma concinnum** Snow

Philomath, V (Lovett).

492. **Melanostoma cœrulescens** Will.

Mary's Peak; Mt. Jefferson (Lovett).

493. **Melanostoma dubium** Zett.

Rock Creek, III-30; Duffy's Prairie, VII-26 (Lovett). Doubtfully assigned here.

494. **Melanostoma mellinum** (Linn.)

Common in the Willamette and Hood River Valleys.

495. **Melanostoma obscurum** (Say)

Mary's Peak, VIII (Lovett).

496. **Melanostoma stegnum** (Say)

Common, V to VIII.

497. **Leucozona lucorum** (Linn.)

Mary's Peak, VIII (Lovett).

498. **Eupeodes volucris** O. S.

Common, V to VIII.

499. **Didea fasciata** Macq.

Common, VII to VIII, at altitude of 3,000 to 6,000 feet.

500. **Didea laxa** O. S.

Common, IV to VIII. Found at low altitudes during early summer and late fall, but most common at altitudes of 2,500 to 6,000 feet in forests near clearings, hovering in shafts of sunlight that strike down through little open glades.

501. **Didea pacifica** Lovett

Parkdale, VII-12 (Cole). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 246.

502. **Lasiophthicus pyrastri** (Linn.)

Common.

503. **Lasiophthicus pyrastri unicolor** Curtis

In the early summer of 1914, the vetch aphis, *Macrosi-*

phum pisi, was unusually abundant, destroying great areas of vetch during June. One of the commonest beneficial insects preying on the aphids was the larvæ of *L. pyrastri.* Great numbers of these larvæ were collected to study possible parasites. About 3 per cent parasitism was observed. Of the adults emerging about 32 per cent were the melanic forms with black abdomens. A few specimens of *unicolor* were collected about aphids on "snow balls" in 1915. None has since been observed or collected in the valley, which would tend to substantiate Verral's report of their periodical appearance. Two females, one collected 1907 (Bridwell) and one VIII-'17 (Lovett) in the Cascades, alt. 6,500-7,000 feet, are smaller, but apparently belong here. In these two the interrupted cross band on the second abdominal segment persist as two elongate dots.

504. **Syrphus abbreviatus** (Zett.)

Corvallis, IV; Mary's Peak, VI (Lovett).

505. **Syrphus americanus** Wied.

Common. This species and *opinator* are two of the most common and generally beneficial forms of Syrphidæ feeding on aphids in Oregon. *L. pyrastri* proves the greatest feeder of all on *Aphis carbicolor* and *Macrosiphum pisi;* but on the basis of species attacked and general abundance *opinator* ranks first with *americana* a close second.

506. **Syrphus arcuatus** Fall.

Common, V-VIII. More abundant in higher altitudes 2,500 to 5,800 feet.

507. **Syrphus bimaculatus** Lovett

Mary's Peak, VI-15 (Lovett); Mt. Jefferson, VI (Bridwell). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 244.

508. **Syrphus diversipes** Macq.

Pamelia Lake; Mary's Peak, VII-VIII (Gentner); Lava Lake, VII-25 (Lovett).

509. **Syrphus grossulariæ** Meig.

Parkdale, VI-18 (Cole); Corvallis (Lovett).

510. **Syrphus intrudens** O. S.

Mt. Jefferson; Mary's Peak (Bridwell and Lovett); Hood River, V-20 (Cole). Fairly common in higher altitudes during August.

511. **Syrphus maculifrons** Bigot

Described from Oregon.

512. **Syrphus mentalis** Will.

Tillamook, III-26 (Burrill); Rock Creek, III-20 (Lovett). Type from Washington Territory. A rare species. Two males which I am satisfied belong here vary from the female in certain minor respects and the following notes are appended.

Male. Similar in general appearance and markings to the female, everywhere tending to be darker and with more elongate pile. Frontal triangle swollen, pile black, coarser and longer than in female. Antennæ darker, but, as in female, set in yellow field. Dark facial stripe much broader, the yellow on sides narrow and obscured by gray pollen. Pile on face elongate, black; cheeks black, narrowly yellowish below oral margin.

Abdominal cross bands similar in appearance to female, first and third do not reach lateral margins though this is evidently a variable character. Legs black, briefly brown at union of femora and tibiæ. Pile black, elongate.

513. **Syrphus opinator** O. S.

Common. See note under *americana*.

514. **Syrphus pacificus** Lovett

Corvallis (Lovett); Hood River, V (Cole). 1919, Proc. Cal. Acad. of Sci., Ser. 4, IX, p. 245.

515. **Syrphus perplexus** Osburn

Burns, V (Thompson); Philomath, V; Mary's Peak, VIII (Lovett). 1910, Jl. N. Y. Ent. Soc., XVIII, p. 55.

516. **Syrphus protritus** O. S.

Grant Co., one specimen, no other data.

517. **Syrphus ribesii** (Linn.)
Common in Willamette and Hood River Valleys.

518. **Syrphus ruficauda** Snow
Dee, VI-17 (Cole).

519. **Syrphus sodalis** Will.
Corvallis (Lovett).

520. **Syrphus torvus** O. S.
Common in many parts of Oregon.

521. **Syrphus umbellatarum** (Fabr.)
Freewater, IX-X (Moznette); Mary's Peak; Mt. Jefferson, VII and VIII (Lovett).

522. **Syrphus velutinus** Will.
Described from Mt. Hood.

523. **Allograpta fracta** O. S.
Common.

524. **Allograpta obliqua** (Say)
Common.

525. **Xanthogramma æqualis** (Loew)
Dee, VI-17 (Cole).

526. **Mesogramma boscii** (Macq.)
Forest Grove, V-5 and Hood River, VII-20 (Cole).

527. **Mosogramma gemminata** (Say)
Common.

528. **Mesogramma marginata** (Say)
Common.

529. **Sphærophoria cylindrica** (Say)
Common.

530. **Sphærophoria melanosa** Will.

Common, but not as abundant as *cylindrica*.

531. **Sphærophoria micrura** O. S.

Mt. Jefferson, VII (Bridwell); Corvallis, IX (Lovett).

532. **Sphærophoria sulphuripes** (Thoms.)

Common.

533. **Sphegina infuscata** Loew

Corvallis, IV-28 and Hood River, V-20 to VI-2 (Cole); Tillamook, III-26 (Burrill).

534. **Sphegina lobata** Loew

Oregon is type locality.

535. **Sphegina punctata** Cole, new species

General color yellowish, the hind femora with a broad dark band and the tip of the abdomen more or less blackish. Apical margin of the wing infuscated; a dark spot outside the anterior cross vein.

Male: Frons blackish gray, gray pollinose except for a narrow line, and yellowish at the base of the antennæ; rather long and narrow, of about equal width, widening a little from the ocelli back to the occiput; antennæ pale brownish yellow; the arista pale brown or yellow; cheeks and palpi yellow, the occiput blackish, gray pollinose.

Thorax, pleura, and scutellum orange-yellow, the color varied a little; thorax often reddish; thorax and pleura with short, yellow pile. Halteres pale yellow. Abdomen yellowish marked with blackish, the first segment short, second long and slender, third and fourth broader; a dark spot on the posterior margin of second segment, the third and fourth darkened above and below. Genitalia blackish, marked with yellow, gray pollinose. The first abdominal segment may be brown and all of the fourth blackish.

Legs yellow, the front two pairs with the last two tarsal joints dark brown; hind femora with a broad, blackish brown ring; tibiæ with two dark rings, one near the apex and a

fainter one near the middle; hind metatarsi dark brown except the tip; last two joints of the tarsi blackish; spines under the hind femora strong and black; base of hind coxæ darkened in some specimens. Wings smoky hyaline with a very distinct blackish spot just outside the anterior cross-vein and a small spot in the submarginal near the tip of the wing (see fig. 29); apical half of wing smoky brown around the border, the stigma dark; the spot near the anterior cross-vein varies in size.

Female: Markings almost as in the male. First abdominal segment and posterior part of second darkened, the rest a reddish color; ring on the hind femur paler; base of abdomen narrow but suddenly widening, the third and fourth segments much wider than in male. Frons yellow and wider than in male.

Holotype, male, No. 839, Mus. Calif. Acad. Sci., F. R. Cole, collector, June 4, 1917; *allotype,* female, No. 840, Mus. Calif. Acad. Sci., F. R. Cole, collector, Hood River, Oregon, May 25, 1917.

Type locality, Hood River, Oregon.

This species is quite distinct from other described forms, especially in the wing markings. As in the other species the vein closing the first posterior cell has a characteristic angle.

536. **Sphegina rufiventris** Loew

Mt. Jefferson, VII-15 (Bridwell); Mary's Peak (Lovett); Hood River, V-20 (Cole). The two commonest species at Hood River and vicinity are undescribed forms and will be described in a later paper.

537. **Neoascia globosa** (Walk.)

Mt. Hood (Bigot); Corvallis (Lovett). Common in April and May in low marshy areas and about margins of small lakes. "Large series taken at Hood River in May" (Cole).

538. **Brachyopa gigas** Lovett

Corvallis, IV (Thompson). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 243.

539. **Brachyopa media** Will.

Hood River, V-17 (Cole); Corvallis, V-15 (Lovett).

540. **Brachyopa notata** O. S.

Corvallis (Preston); Hood River, VI-6 (Cole).

541. **Volucella evecta** Walk.

Corvallis, V and VI (Lovett and Black); Forest Grove, IV-31 (Rockwood). Fairly common.

542. **Volucella tau** Bigot

Corvallis, V-10 (Lovett).

543. **Sericomyia chalcopyga** Loew

One of the commonest of midsummer forms in higher altitudes, 2,500 to 6,000 feet.

544. **Arctophila flagrans** O. S.

Wallowa Co., VI (Ault).

545. **Arctophila harveyii** Osburn

Nine specimens, Mt. Jefferson, 5,800 ft., VIII (Lovett). Would make the following additions to description to fit our specimens: Margin of fourth segment of abdomen of female not reddish, scutellum of male below translucent reddish, disc of abdomen sometimes with distinct, dull reddish tinge. 1906, Can. Ent. XXXVIII, p. 1.

546. **Pyritis kincaidii** (Coq.)

Corvallis, V (Lovett); Forest Grove, V-3 (Cole).

547. **Pyritis montigena** Hunter

Baker, IV (Entermille).

548. **Eristalis flavipes** Walk.

Moderately common, a very diversified species.

549. **Eristalis latifrons** Loew

Corvallis, V-27 (Lovett).

550. **Eristalis meigenii** Wied.

A widespread species occurring from New England to Alaska.

551. **Eristalis occidentalis** Will.

Common.

552. **Eristalis temporalis** Thoms.

Common.

553. **Eristalis tenax** (Linn.)

Common.

554. **Tropidia quadrata** (Say)

Hood River (Cole); Corvallis (Lovett). Fairly common.

555. **Helophilus latifrons** Loew

Corvallis and Hood River, V and VI (Cole and Lovett). Williston in his Synopsis says, "Mass. to Cal. and Wash."

556. **Helophilus polygrammus** Loew

Osten Sacken had specimens from Oregon collected by H. Edwards.

557. **Helophilus similis** Macq.

Fairly common.

558. **Asemosyrphus mexicanus** Macq.

Reported from Oregon by Osten Sacken. It is a fairly common species in higher altitudes and scatteringly on plains in midsummer.

559. **Mallota sackeni** Will.

Corvallis, V and VI; Mosier, VI-14 (Cole).

560. **Syritta pipiens** (Linn.)

"Everywhere and at all times abundant from spring to autumn."

561. **Xylota analis** Will.

Detroit, VII (Bridwell); Mt. Jefferson, VIII (Lovett).

562. **Xylota barbata** Loew

Hood River, V and VI (Cole); Mt. Jefferson; Corvallis, V to VIII (Lovett).

563. **Xylota ejuncida** Say

Hood River, V and VI (Cole).

564. **Xylota flavitibia** Bigot

Hood River, X-3 (Cole).

565. **Xylota fraudulosa** Loew

Hood River and Corvallis, V to VII (Cole and Lovett).

566. **Xylota nemorum** (Fabr.)

Hood River and Forest Grove, V (Cole); Corvallis, IX-18.

567. **Xylota obscura** Loew

Williston lists from Oregon.

568. **Xylota pigra** (Fabr.)

Horse Lake, VII-25 (Bridwell).

569. **Xylota scutellarmata** Lovett

Hood River, V-17 (Cole). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 241.

570. **Xylota stigmatipennis** Lovett

Hood River, VI (Cole). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 242.

571. **Xylota subfasciata** Loew

Corvallis, V-15 (Lovett). Bred from larvæ collected in decayed heart of fir, *Pseudotsuga taxifolia.*

572. **Eumerus strigatus** Fall.

Corvallis, V; Hood River, VII-20, breeding in onions. (Cole and Childs).

573. **Chrysochlamys crœsus** O. S.

Corvallis, V; Mt. Jefferson, VIII (Lovett and Smith); Hood River, V-24 to VI-9 (Cole).

574. **Brachypalpus parvus** Will.

Corvallis; Hood River VI (Cole).

Female: Face and cheeks black, heavily white pollinose. Cheeks with broad shining stripe from oral margin to base of eye. Front above, vertex and a triangle on antennal prominence white pollinose; on the sides below, shining. Cheeks, just below antennæ, front, and vertex golden pollinose.

Abdomen opaque black with areas of opaque blue-gray pollen as follows: First segment, except hind margin, quadrangles on second segment reaching neither front, posterior, nor lateral margins; similar areas on third reaching anterior margin and brief crescents on anterior margin of fourth. Otherwise as male.

575. **Brachypalpus pigra** Lovett

Mt. Jefferson, VIII-15 (Lovett). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 241.

576. **Caliprobola pulcher** (Will.)

Mt. Jefferson, Mary's Peak, Hood River and Corvallis, VII to VIII (Bridwell, Cole, Lovett and Childs). Found commonly in midsummer on flowers in clearings in higher altitudes, 4,800 to 6,000 feet where it frequents edges of clearings, resting on low shrubs; or on bark of trees in sunlight at lower altitudes. It has been collected at Corvallis in October, resting on a window.

577. **Caliprobola crawfordi** Shannon

Hood River, Mary's Peak and Corvallis (Cole, Lovett, Chamberlin). Fairly common in unusual situations. Bred adult from larvæ collected in decayed heartwood of Douglas Fir (Lovett). Not uncommon near Forest Reserve west of Parkdale. Three specimens collected at Hood River along railroad track, crawling under old ties. Those at Parkdale were flying around scarred or burned trees (Cole

and Childs). 1916, Proc. Ent. Soc. Wash., XVIII, p. 112.

The median cross bands on third and fourth segments often are interrupted; occasionally anterior cross band on fourth entirely concealed under posterior margin of third segment and median band reduced to two narrow elongate spots.

578. **Crioprora alopex** (O. S.)

Forest Grove, III-20 (Cole); Tillamook, III-26 (Burrill); Mary's Peak, III-30 (Lovett).

579. **Crioprora cyanella** (O. S.)

Corvallis, V-15 (Black).

580. **Crioprora femorata** Will.

Dee and Hood River, V and VI (Cole); Mary's Peak, VI (Lovett).

581. **Cynorhina armillata** (O. S.)

Mary's Peak, VI-15; Lebanon, V-18 (Lovett).

582. **Cynorhina humeralis** (Will.)

Corvallis, V (Summers); Hood River, VI (Cole).

583. **Cynorhina scitula** (Will.)

The most common midsummer species on blossoms in higher altitudes, 3,000 to 6,000 feet, outranking even *Sericomyia chalcopyga* (Lovett).

584. **Pocota grandis** (Will.)

Mt. Jefferson, VII and VIII (Bridwell and Lovett). A large, showy creature, occurring in blossoms of yarrow at an altitude of 4,000 to 6,000 feet. Found generally just at the edge of the forest and in small sunny clearings. Its flying period is from 9 to 11 A. M., and it is seldom seen later. Considering its size, it is swift in flight, alighting but seldom and then for a brief time.

585. **Criorhina grandis** Lovett, new species

Length 15 to 17 mm. A conspicuous black and yellow species. Black with elongate black pile, across thorax in

front of wings and on 4th segment of abdomen golden yellow pilose. Superficially resembles *Pocota grandis*.

Female: Face and front dull black; tubercle and vertex bare of pollen, subshining, front and face on the sides heavily brown pollinose; cheeks shining black; pile on sides of face golden, coarser, more elongate and mixed brown and black from antennal prominence to eye margin; front, vertex and cheeks black pilose, elongate on vertex and cheeks, on latter mixed with brown. Antennæ brown, first and second segments deep shining mahogany, sub-equal in length, third segment dull brownish black, lighter basally, the segment thick, about one-half broader than long, not produced materially at any angle, arista deep brownish black. Proboscis produced, heavy and blunt.

Thorax and scutellum black, subshining. Pile elongate, dense, yellow in front of wings on dorsum and pleura, black behind wings and on scutellum.

Abdomen black subshining, fourth segment with obscure metallic reflections; pile elongate black; on apical two-thirds of fourth segment yellow, on fifth segment elongate, coarse, mixed brown and black.

Legs black, knees briefly reddish brown; pile on femora elongate black, mixed with brown on under surface of hind femur; tibia and tarsi with short golden pile; at base of hind coxa a heavy tuft of coarse golden, brown and black pile. Wings subhyaline, veins black with extended brownish margins.

Holotype, female, No. 841, Mus. Calif. Acad. Sci.; A. B. Black, collector, June, 1919. A second female, *paratype,* was collected at the same time and place by A. L. Lovett and is in his collection.

Type locality, Mary's Peak, Oregon.

This species is very near *coquilletti* Will. and may prove to be a synonym. The extreme disparity in size and apparent facial and antennal differences are all that seem specific. No opportunity has been afforded to compare the two.

586. **Criorhina kincaidi** Coq.

Horse Mt., VII; Mary's Peak, V to VII (Lovett).

587. **Criorhina luna** Lovett

Alsea; Tillamook, III-26 (Burrill); Mary's Peak, V and VI (Lovett). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 249.

588. **Criorhina nigripes** (Will.)

Corvallis; Forest Grove, IX-14 and Hood River, IV and V (Cole). A specimen believed to be a male labelled "Stanford Univ., Cal., Feb. 28, 1909," has certain markings varying from the female as follows: Face similar, tubercle more prominent; fairly abundant elongate yellow pile from base of antennal prominence out to and extending down along eye margin. Above antennal prominence with a transverse appressed line; vertical triangle opaque. Thorax and abdominal markings similar to female except fifth segment with short black pile. Legs black with elongate light yellow pile. Tarsal claws yellow at base.

589. **Criorhina quadriboscis** Lovett

Mt. Jefferson, IV-16 (Hartley). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 250.

590. **Criorhina tricolor** Coq.

Mt. Jefferson, VII-VIII (Bridwell); Hood River, VI-17 (Cole). Redescribed in 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 251.

591 **Spilomyia interrupta** Will.

Corvallis, IX (Bridwell); Hood River, VIII-24 (Childs).

592. **Sphecomyia brevicornis** O. S.

Hood River, VI-6 (Cole). One pair taken.

593. **Sphecomyia nasica** Osburn

Mt. Jefferson, VII-VIII (Bridwell, Lovett).

594. **Sphecomyia pattoni** Will.

Mt. Jefferson, VII-VIII (Bridwell, Lovett). These last two species as I have observed them in August are rare, found entirely in the forenoon, occurring just at the edge of clearings and flying swiftly, close to the ground, resting

occasionally in low growing shrubbery at the very edge of dense forests.

595. **Ceria tridens** Loew

Pendleton, VIII-18 (Black, Thompson).

Family CONOPIDÆ

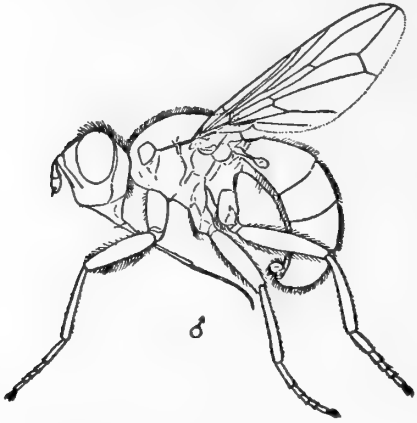

Fig. 30. *Dalmannia pacifica* Banks.

These are flower flies and are not usually very conspicuous. Some of the species resemble slender wasps while others are more thick-set. The term "thick headed flies" is sometimes applied to them, this being no reflection on their mentality. Not much is known of the early stages but certain species have been bred from adult Hymenoptera, and, according to Dr. Williston, from Orthoptera. The flies evidently deposit their eggs on the bodies of some bees in flight and have been observed several times attempting to do this.

596. **Physocephala affinis** (Will.)

Hood River, VII-7 to IX-4, and La Grande, IX-20 (Cole); Vale, VIII-15.

597. **Physocephala burgessi** (Will.)

Big Lake, VII-20 (Bridwell).

598. **Physocephala marginata** (Say)

Albany, VII-10; Corvallis, VI-5.

599. **Zodion fulvifrons** Say

Hood River, VI-16 (Cole); Mackenzie Ridge, alt. 6,000 ft., VIII-1. This species has been bred from the common honey bee.

600. **Zodion pygmæum** Will.

Hood River, VI-19 (Cole).

601. **Zodion occidentale** Banks

Hood River, VI-3 (Cole); Mary's River, V-2; Corvallis, V-13. 1916, Ann. Ent. Soc. Amer., IX, p. 194.

602. **Zodion triste** Bigot

Corvallis, V-13 (Lovett).

603. **Dalmannia pacifica** Banks

Mosier, VI-14 (Cole and Childs); Corvallis, VI-6, 1899, the type specimen. 1916, Ann. Ent. Soc. Amer., IX, p. 199. A number of freshly emerged specimens were taken at Mosier feeding at a yellow flower of the aster family. The females were observed striking a species of *Halictus,* as these bees passed by the flowers on the way to their nests in the ground. The two would often go to the ground together, rolling over and over in the dust. The flies probably succeed in some cases in depositing an egg on the body of the bee.

604. **Dalmannia vitiosa** Coq.

Forest Grove, IV-30 (L. P. Rockwood). One specimen.

605. **Oncomyia abbreviata** Loew

Corvallis, V-2 (Lovett).

606. **Oncomyia baroni** Will.

Corvallis, VI-2 (Lovett); Horse Lake, VII-25.

607. **Oncomyia loraria** Loew

Corvallis, V-2 and VI-5 (Lovett).

608. **Oncomyia modesta** Will.

Hood River, VI-2 to VI-25 (Cole). This is a very common species at Hood River and is apparently parasitic on a bee, determined by Mr. Crawford of the National Museum as *Halictus ligatus* Say. The flies are often taken on flowers and three specimens had the triangulin stage of some Meloid beetle attached to them. The females perch on grass stems or flowers near the underground colony of bees and swoop down on the unsuspecting pollen gatherers as they approach their burrows. The fly and bee usually go tumbling on the ground together, but the fly does not try to sit on the bee, and always manages to get away in a great hurry, returning to her observation post, there to clean off some of the dust and watch for more victims. It is amusing to watch them follow the bee with their eyes as it looms up on their horizon. They strike so quickly that their flight can scarcely be followed. The bees make no attempt to drive them away, but when attacked make frantic efforts to escape.

609. **Myopa longipilis** Banks

Corvallis, IV-22; Forest Grove, IV-12 (Rockwood); Hillsboro, IV-1 (Cole). 1916, Ann. Ent. Soc. Amer., IX, p. 197.

610. **Myopa melanderi** Banks

Hood River, V-10 and 16 (Cole). 1916, Ann. Ent. Soc. Amer., IX, p. 197.

611. **Myopa rubida** (Bigot)

Hood River, V-5 to VI-24 (Cole); Mosier, VI-14 (Childs and Cole); Forest Grove, IV-12 (Cole); Wheeler Co., VI-15; Corvallis, VI-3. This species is quite common in the Hood River Valley in the spring and early summer, frequenting various flowers.

612. **Myopa seminuda** Banks

Corvallis, IV-12 (Cotypes). This species is very near *rubida* and may be only a variety of that species. 1916, Ann. Ent. Soc. Amer., IX, p. 198.

613. **Myopa vicaria** Walk.

Hood River, V-19 (Cole).

614. **Myopa willistoni** Banks

Corvallis, V-20. New name for *pictipennis* Will.

Family ŒSTRIDÆ

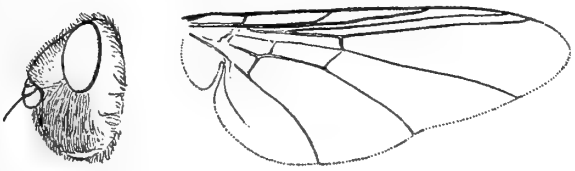

Fig. 31. *Gastrophilus nasalis* Linnæus.

Bot-flies are medium sized to quite large and have aborted mouth parts. Some are hairy and bee-like in appearance and others blue-black with spots of white bloom. Certain species are well known to all farmers and stockmen. The larvæ live under the skin of animals, in the nasal passages, and in the stomach. The bot-flies are thus an important family economically.

615. **Gastrophilus hæmorrhoidalis** (Linn.)

Occurs generally over North America, as do the other horse bots.

616. **Gastrophilus intestinalis** DeGeer

Commonly known as the "horse-bot."

617. **Gastrophilus nasalis** (Linn.)

Known as the "nose-fly".

618. **Œstrus ovis** Linn.

The sheep bot.

619. **Hypoderma lineata** (DeVill.)

The ox-bot. The only specimen with data was taken at Burns, V-19 (B. G. Thompson).

620. **Cuterebra fontinella** Clark

The same as *emasculator* Fitch. Buck Mt., VII-10; Corvallis.

621. **Cuterebra leporivora** Coq.

Corvallis, VIII-28. Reared from *Mus musculus* (Bridwell).

622. **Cuterebra tenebrosa** Coq.

La Grande, VII-6; Corvallis, IV.

Family TACHINIDÆ

Fig. 32. *Dionœa nitoris* Coq.

The family is a large one, 957 species being listed in Aldrich's Catalogue. They are usually short, stout, unusually bristly flies. The antennal arista is always bare and the squamæ, large. Flowers attract many of the species and they are often seen flying about rank vegetation. Some of the smaller species resemble the common house-fly in general appearance.

Many of the species are very beneficial, the larvæ being parasitic on injurious insects. A few attack beneficial insects, but only a small percentage. They are the chief control of many caterpillars. From one to one hundred grubs may work on one host larva, much depending on the size of the victim.

Most of the species listed below were determined by Dr. J. M. Aldrich, or the determinations already made were verified by him.

623. **Gymnoclytia immaculata** Macq.

Dee and Hood River, VI-8 to VII-5 (Cole and Childs).

624. **Gymnoclytia occidua** (Walk.)

Hood River, VI-3 (Cole).

625. **Gymnosoma fuliginosa** Desv.

Hood River, VI-2 to VIII-20 (Cole and Childs). Common throughout the Northwest.

626. **Phorantha calyptrata** Coq.

Hood River, VIII-7 (Childs).

627. **Phorantha occidentis** (Walk.)

Hood River, VIII-7 (Cole).

628. **Alophora æneoventris** (Will.)

Hood River, X-3 (Cole).

629. **Myiophasia ænea (Wied.)**

Corvallis and Blitzen River, VI-16 to VII-6.

630. **Gymnophania montana** Coq.

Hood River, VII-18 (Cole).

631. **Hyperecteinia pergandei** (Coq.)

Corvallis; Seaside Beach, X-22.

632. **Hyperecteinia retiniæ** (Coq.)

Hood River, VIII-28 (Childs).

633. **Lasioneura johnsoni** Coq.

Hood River, VI-27 and VII-9 (Cole and Childs).

634. **Chætophleps setosa** Coq.

Forest Grove, IX-28 (Cole).

635. **Hypostena barbata** Coq.

Hood River, VI-16 (Cole) and VII-1 (Childs). Aldrich says in regard to material sent for determination: "They agree with what I call this, but *Hypostena* and *Masicera* run together, and this is not separable generically from some I put under the latter farther on. The supposed difference is that in *Masicera* the first posterior cell ends considerably before the apex of the wing, and in *Hypostena* close to the apex. The distinction breaks down completely in your material."

636. **Macquartia pristis** (Walk.)

Corvallis, V-21.

637. **Uramyia acuminata** (Bigot)

Corvallis, bred from *Halisidota argentata*. This species was described from Brazil and later found in Mexico. According to Aldrich, Townsend's *Uromacquartia halisidotae*, named without description, is a synonym of this species. Townsend's type is the single male mentioned by Coquillett under *Macquartia pristis* (Revision Tachinidæ, p. 64) from Aurora Mills, Oregon, and recorded as a parasite of *Halisidota argentata* on p. 18. This species, as Dr. Aldrich points out, has reversed the usual trend of distribution on the coast.

638. **Leskia gilensis** (Towns.)

Corvallis, VIII-25-1916 (B. G. Thompson). Bred from *Sesia rutilans*.

639. **Leucostoma atra** Towns.

Corvallis, V-17 (Lovett); Hood River, IX-2 (Childs); Forest Grove, V-28 to X-15 (Cole).

640. **Clausicella setigera** Thoms.

Forest Grove, VI-5 (Cole).

641. **Hyalomyodes triangulifera** Loew ....

Corvallis, VII-17 (Lovett); Forest Grove, V-20 and Hood River, VI-3 (Cole).

642. **Clytiomyia atrata** Coq.

Hood River, VI-3 (Cole).

643. **Dionæa nitoris** Coq.

Hood River, VI-26 and Forest Grove, V-20 to VII-26 (Cole).

644. **Xanthomelana arcuata** (Say)

Hood River, VII-9 and 25 (Cole).

645. **Hemyda aurata** Desv.

Corvallis, VII-16 (Lovett).

646. **Heteropterina nasoni Coq.**

Hood River, VI-14 to VI-28 (Cole and Childs).

647. **Paraplagia spinulosa** (Bigot)

Coos River, IX-25 (Rockwood).

648. **Plagia americana** V. d. W.

Common in Oregon.

649. **Pachyophthalmus floridensis** Towns.

Hood River, VIII-27 (Cole).

650. **Senotainia trilineata** (V. d. W.)

Hood River, VI-8 to IX-14 (Cole and Childs). This species is a parasite of *Sphecius speciosus*.

651. **Aphria ocypterata** Towns.

Hood River, VII-9 (Cole); Mary's Peak, V-15; Pamelia Lake, Mt. Jefferson, VII-23.

652. **Ocyptera**[21] **dosiades** Walk.

Forest Grove, VIII-18 (Cole).

653. **Panzeria ampelus** Walk.

Whitman Nat. Forest, VII-16 (Chamberlin).

654. **Panzeria radicum** (Fabr.)

Duffy's Prairie (Lovett); Mt. Jefferson, alt., 3,000 ft., VIII-12.

655. **Gymnochæta alcedo** Loew

Mosier, VI-14 (Cole and Childs). These specimens flew low over the ground and through the grass, seldom alighting. The species is rare in the Northwest.

[21] The species common throughout the Northwest is said by Aldrich to be an undescribed form, although usually placed in *carolinae*. The male genttalia show good specific characters.

656. **Exorista futilis** O. S.

Reported from Oregon by Coquillett. A parasite of the common butterfly, *Vanessa atalanta.*

657. **Exorista vulgaris** (Fall.)

Corvallis, VI.

658. **Phorocera claripennis** Macq.

Halsey, VIII-14 (Lovett). Bred from *Schizura concinna* at Corvallis, IX-4 (Gentner).

659. **Phorocera facialis** Coq.

Hood River, VI (Cole).

660. **Phorocera saundersii** Will.

Halsey, VIII-14 (Lovett); Hood River, VI (Cole).

661. **Frontina frenchii** (Will.)

Large series from Corvallis, IV-30 to IX-30, those on the last date bred from a sphingid on *Populus trichocarpa.* This parasite has a long list of lepidopterous hosts.

662. **Tachina**[22] **mella** Walk.

Corvallis, V-4 to VI-24.

663. **Tachina robusta** (Towns.)

Corvallis and Hood River, IV-28 to VI-3. Common.

664. **Tachina rustica** Fall.

Corvallis, V-28; Hood River, VI-12 (Cole and Childs); Forest Grove, IX-30 (Cole).

665. **Blepharipeza adusta** Loew

Hood River, VI-14 (Childs); Corvallis; Philomath, V-16 (Lovett).

[22] Four additional species in this genus were collected at Hood River but none could be determined with certainty.

666. **Blepharipeza leucophrys** (Wied.)

Hood River, VI-9 (Cole).

667. **Winthemia quadripustulata** (Fabr.)

Not uncommon at Hood River and Corvallis in August. A parasite of the army worm and variegated cutworm.

668. **Metachæta helymus** (Walk.)

Corvallis, VIII-7 (Lovett).

669. **Metopia leucocephala** (Rossi)

Hood River, VI-12 to IX-2 (Cole).

670. **Hilarella fulvicornis** (Coq.)

Hood River, VI-5 to IX-2 (Cole). Aldrich states that this species is common on sand around fossorial hymenoptera.

671. **Brachycoma sarcophagina** (Towns.)

Corvallis, VII-30.

672. **Gonia exul** Will.

Corvallis, IX-11; Mt. Jefferson, 6,000 feet; Burns.

673. **Gonia frontosa** Say

Common at Hood River and Corvallis, VI to XI.

674. **Gonia porca** Will.

Described from Mt. Hood.

675. **Chætogædia monticola** (Bigot)

Hood River, IX-2 (Childs); Corvallis, V-4 and IX-5. A parasite of the variegated cutworm and of the larva of the common thistle butterfly (*Pyrameis cardui*).

676. **Cuphocera furcata** (V. d. W.)

Grant Co., IV-23.

677. **Peleteria robusta** (Wied.)

Common at Corvallis, Forest Grove and Hood River, V-19 to IX-29; Detroit and Grant's Pass.

678. **Peleteria tessellata** (Fabr.)

Corvallis; Mt. Jefferson; Hood River (Cole and Childs). Collected from V-17 to IX-31. Aldrich says, "I name these provisionally as Coquillett did, but this is a complex that will have to be worked out by genitalic studies."

679. **Echinomyia**[23] **algens** (Wied.)

Common in several localities in the Willamette Valley from May to August. Collected on Mt. Jefferson and at Seaside.

680. **Echinomyia dakotensis** Towns.

Hood River, IX-4 (Cole); Mt. Jefferson, subalpine, VII.

681. **Echinomyia decisa** (Walk.)

Mary's Peak, VII-18 (Lovett).

682. **Echinomyia hystricosa** (Will.)

Corvallis.

683. **Epalpus bicolor** (Will.)

Barton, VIII-22.

684. **Epalpus signiferus** (Walk.)

Corvallis, IV-26 to VII-4; Hood River, V-5 to VI-24 (Cole).

685. **Bombyliomyia abrupta** (Wied.)

Barton, VII-21.

686. **Jurinella soror** (Will.)

Hood River, VI-5 (Cole).

[23] One species, occasionally taken at high altitudes and found in several localities in the west is undescribed.

Family DEXIIDÆ

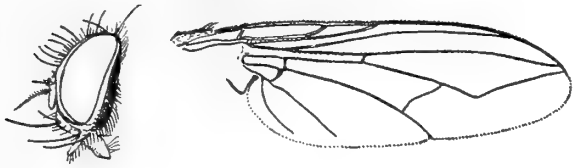

Fig. 33. *Thelaira levcozona* Panzer.

These are the "nimble flies" of Comstock. They are very close to the tachinids but usually have longer and more slender legs and the antennal arista plumose to the tip. The larvæ have been bred from beetles.

The species listed below were determined by Dr. Aldrich. In addition to these there are five undetermined species.

687. **Myiocera cremides** (Walk.)

Vale, VIII-15.

688. **Thelaira leucozona** (Panz.)

Hood River, VI (Cole).

689. **Melanodexia tristis** Will.

Corvallis.

690. **Trixia gillettei** Towns.

Mosier, VI-14 (Cole). This species has been considered a tachinid in the past and really does not belong in Trixia which is a tachinid genus; neither does it belong in *Paraphyto* where it was placed in Aldrich's Catalogue. It does not fit any of the dexiid genera in North America.

Family SARCOPHAGIDÆ

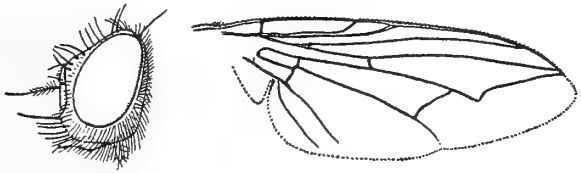

Fig. 34. *Sarcophaga hunteri* Hough.

These much resemble the house-flies in general appearance. The antennal arista is plumose at the base and bare at the tip. The flies are very common about decaying vegetation, excrement, dead bodies, etc., and are called flesh-flies.

The larvæ are found in decaying vegetable and animal matter. A few are true parasites and are economically important. Many of the species are larviparous and some are known to strike grasshoppers on the wing and place their larvæ in a vulnerable spot.

The following species were determined by Dr. Aldrich.

691. **Sarcophaga aculeata** Aldr.

Specimens from Corvallis are probably a new variety. 1916, "Sarcophaga and Allies", p. 143.

692. **Sarcophaga bullata** Parker

Corvallis, X. 1916, Can. Ent., XLIII, p. 359.

693. **Sarcophaga cimbicis** Towns.

Corvallis.

694. **Sarcophaga eleodis** Aldr.

Corvallis, V-6. This species is remarkable, in that it parasitizes beetles of the genus *Eleodes*. 1916, "Sarcophaga and Allies", p. 128.

695. **Sarcophaga hæmorrhoidalis** (Fall.)

Corvallis, X-21. A scavenger of wide distribution, occasionally the cause of intestinal myiasis. The species occurs throughout Europe, Africa and Asia.

696. **Sarcophaga helicis** Towns.

Corvallis, IX-20; Forest Grove. One of the commonest North American species, largely a scavenger but also a true parasite of grasshoppers, *Eleodes*, etc.

697. **Sarcophaga hunteri** Hough

Corvallis, VI-2 to VII-22 (Rockwood); Forest Grove, X-2 (Creel). A grasshopper parasite.

698. **Sarcophaga kellyi** Aldr.

Corvallis (H. F. Wilson). A grasshopper parasite. Jl. of Agr. Research, II, p. 443.

699. **Sarcophaga pallinervis** Thoms.

Described from Hawaii in 1868 and probably a prior name for *S. communis* Parker. It is a very common scavenger. Freewater, IX-8; Corvallis, IV-VIII.

700. **Sarcophaga planifrons** Aldr.

Narrows, VII. 1916, "Sarcophaga and Allies", p. 249.

701. **Sarcophaga sarracenioides** Aldr.

Corvallis, V-11 and VIII-15 (Cole and Lovett). Both a scavenger and a parasite. 1916, "Sarcophaga and Allies," p. 227.

702. **Sarcophaga scoparia** Pand.

Corvallis, VII-8; Forest Grove, V-3 and II-1 (Cole). 1916, "Sarcophaga and Allies", p. 214. Dr. Aldrich says that North American specimens deserve a varietal name.

703. **Sarcophaga sinuata** Meig.

Corvallis, V-30. Europe and North America. "Easily recognized in both sexes by the patch of bright yellow tomentum on the front side of the middle femur."

704. **Sarcophaga tuberosa exuberans** Pand.

Corvallis. 1916, "Sarcophaga and Allies", p. 232.

705. **Megerlea rufocauda** Bigot

Described from Mt. Hood. The status of this species is not known, Coquillett placed it in the genus *Sarcophilodes* and Brauer considered it should have a new genus erected for it.

Family MUSCIDÆ

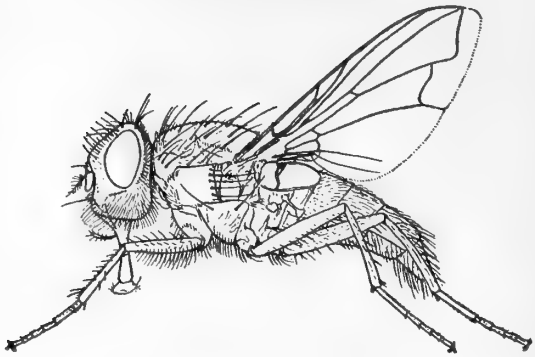

Fig. 35. *Pollenia rudis* (Fabr.)

Small to medium sized, short, and usually hairy flies. The antennal arista is usually plumose to the tip, the first posterior cell narrowed or closed and the squamæ are large. They are disease carriers and very important economically. The common house-fly, or typhoid-fly as it might better be called, is found all over the world. The blow-flies and bluebottle flies are also widely distributed.

The Stomoxyinæ include blood-sucking species. In this group are the horn-flies, stable-flies and tsetse flies.

706. **Pollenia rudis** (Fabr.)

Medford, VIII-15; Corvallis, IX-4. The cluster-fly is known to be parasitic in earthworms.

707. **Cynomyia cadaverina** Desv.

Corvallis, IV-10 to VII-10.

708. **Calliphora erythrocephala** (Meig.)

Common III to XII. This is the common blow fly.

709. **Lucilia cæsar** (Linn.)

Common everywhere. Breeds in excrement, garbage and carrion.

710. **Lucilia sericata** (Meig.)
Common at Corvallis, IV to X.

711. **Phormia regina** (Meig.)
Common at Corvallis.

712. **Phormia terræ-novæ** Desv.
Common at Corvallis.

713. **Protocalliphora azurea** (Fall.)
Corvallis.

714. **Pseudopyrellia cornicina** (Fabr.)
Common, V to XI.

715. **Morellia micans** (Macq.)
Corvallis and Forest Grove (Cole).

716. **Mesembrina resplendens** Wahlbg.
Rock Creek Valley, Benton Co., X-12; Corvallis, IX-10.

717. **Musca domestica** Linn.
Early settlers in Oregon say that the common house-fly was not seen in the early days; they are by no means rare now.

718. **Stomoxys calcitrans** (Linn.)
The biting house-fly or stable-fly. This species is suspected of carrying infantile paralysis.

719. **Hæmatobia serrata** Desv.
The "horn-fly"; common. In his Catalogue, Aldrich reported that this fly had reached Idaho in 1901. There are specimens in the Corvallis collection taken Aug. 14, 1900.

720. **Myiospila meditabunda** (Fabr.)
Forest Grove, VII (Cole).

721. **Muscina assimilis** (Fall.)
Portland, VIII-14; Corvallis, V-19.

722. **Muscina stabulans** (Fall.)

Common. The larvæ breed in manure and may carry disease. They have also been bred from pupæ of other insects, but these were probably dead pupæ.

Family ANTHOMYIDÆ

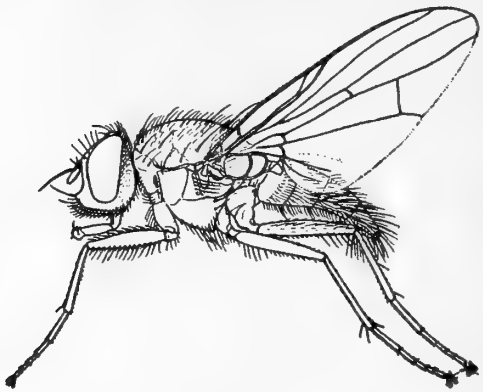

Fig. 36. *Limnophora narona* (Walk.)

This is a large family and, because of their general unattractiveness and the difficulties of differentiation, they have been rather neglected in North America in the past. They are blackish or grayish in color and some resemble the ordinary house-fly in appearance. Their larval habits are varied but most of them breed in decaying animal and vegetable matter.

723. **Hydrotæa orbitalis** Aldr.

Mt. Jefferson, VIII-1 and Cascadia, VII-21 (Lovett). Malloch det. 1918, Can. Ent., L, p. 311.

724. **Homalomyia manicata** (Meig.)

Corvallis, VI-28.

725. **Homalomyia scalaris** (Fabr.)

Corvallis.

726. **Aricia bicolorata** Mall.

Hood River, VI-21 (Cole). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 253.

727. **Aricia leucorum** (Fall.)

Pamelia Lake, Mt. Jefferson, 3,000 feet, VII-19 (Bridwell). Malloch det.

728. **Aricia lysinoë** Walk.

Forest Grove, IX-30 and Hood River, X-3 (Cole). Malloch det.

729. **Aricia nitida** Stein

Mt. Jefferson, VII-25, 5,000 feet (Bridwell). Malloch det.

730. **Aricia oregonensis** Mall.

Grant Co. 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 254.

731. **Spilogaster uniseta** Stein

Corvallis.

732. **Euphaonia houghii** (Stein)

Hood River, IX-5 (Cole). Malloch det. Described under *Hyetodesia.*

733. **Limnophora æquifrons** Stein

Hood River, VI-5 (Cole). Malloch det.

734. **Limnophora narona** (Walk.)

Gaston, VII-10 (Cole). Malloch det.

735. **Leucomelina discreta** (Stein)

Hood River, IX-5 (Cole). Malloch det.

736. **Cœlomyia subpellucens** (Zett.)

Hood River, VI-2 (Cole). Malloch det.

737. **Anthomyia pratincola** Panz.

Corvallis, VI-2 (Lovett). Malloch det.

738. **Hydrophoria divisa** (Meig.)

Hood River, VI-3 (Cole). Malloch det.

739. **Hylemyia alcathoë** (Walk)

Salem, VII-4; Hood River, VI-30 and Eagle Rock, VII-1 (Melander); Hood River, V-19 to X-30 and Forest Grove, V-25 to IX-27 (Cole).

740. **Hylemyia antiqua** Meig.

The onion maggot, widespread and often injurious.

741. **Hylemyia anthracina** Mall.

Hood River, VI-21 (Cole). 1918, Trans. Amer. Ent. Soc. XLIV, p. 314.

742. **Hylemyia fusciceps** (Zett.)

Corvallis, IV-30 to VI-6; Gaston, VII-10 (Cole); subalpine regions on Mt. Jefferson, VII-20 (Bridwell). Common in several localities. The larvæ feed in the roots of cabbages, radish, seed corn, etc.

743. **Hylemyia lipsia** (Walk.)

Grant Co., VII-11 (Chamberlin). Malloch det.

744. **Hylemyia** sp. nov. Mall.

Blitzen River, VII-6. The single specimen a paratype.

745. **Hylemyia piloseta** Mall.

Corvallis, IV-26. 1918, Trans. Amer. Ent. Soc. XLIV, p. 312.

746. **Hylemyia setiventris** Stein

Joseph. Malloch det.

747. **Hylemyia substriata** Stein

Forest Grove, IV-24 (Cole). Malloch det.

748. **Hylemyia variata** (Fall.)

Forest Grove, VII-5 (Melander); Hood River, VI-4 (Cole).

749. **Eremomyia apicalis** Stein

Forest Grove, V-12 (Cole).

750. **Hammomyia unilineata** (Zett.)

Hood River, V-16 (Cole). Aldrich det.

751. **Phorbia brassicæ** (Bouché)

Common, VII-IX. This is the cabbage-root maggot, and is very destructive in parts of Oregon. It was reported as a pest as early as 1891.

752. **Phorbia cinerella** (Fall.)

Tillamook, VIII-29 (Creel); Vale, VI-29. Malloch det.

753. **Phorbia rubivora** Coq.

Common in several localities in the state. The larvæ girdle the tips of raspberry, blackberry, dewberry, and loganberry vines. The flies appear early in April and are seen throughout May and June.

754. **Phorbia ruficeps** (Zett.)

Corvallis.

755. **Phorbia trichodactyla** (Zett.)

Corvallis (Lovett).

756. **Pegomyia affinis** Stein

Corvallis. Malloch det.

757. **Pegomyia bicolor** (Wied.)

Bred out at Corvallis, V-9-1915, from larvæ mining in the leaves of dock; Tillamook, III-26 (Burrill).

758. **Pegomyia hyoscyami** (Panz.)

Corvallis, V-2 (Lovett), other dates from V-3 to VII-3. The larvæ are leaf miners on beets and spinach.

759. **Chirosia idahoensis** Stein

Forest Grove, V-17 (Cole); Salem, VII-4 (Melander). Melander det.

Corvallis and Forest Grove, V (Cole).

761. **Fannia fuscula** (Fall.)

Forest Grove, V-17 and Hood River, VI-13 (Cole). Malloch det.

762. **Fannia ochrogaster** (Thoms.)

Forest Grove, VI-2 (Cole). Malloch det.

763. **Cœnosia ausoba** (Walk.)

Hood River, VI (Cole). Malloch det.

764. **Cœnosia flavicoxa** Stein

Hood River, VI-4 (Cole); Corvallis, VIII-2 (Lovett); Malloch det.

765. **Cœnosia oregonensis** Mall.

Corvallis, V-2 (Lovett). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 254.

766. **Machorchis nana** (Zett.)

Corvallis, V-2. Malloch det.

767. **Schœnomyza chrysotoma** Loew

Hood River, VI-19 to X-26 (Cole); Forest Grove, V-13 (Burrill).

768. **Schœnomyza dorsalis** Loew

Blitzen River, VII-1. Aldrich det.

769. **Lispa brevipes** Aldr.

Hood River, IX-29 (Cole). 1913, Jl. N. Y. Ent. Soc., XXI, p. 137.

770. **Lispa nasoni** Stein

Forest Grove, IX-27 (Cole).

771. **Lispa palposa** (Walk.)

Forest Grove, IX-27 (Cole).

772. **Lispa spinipes** Aldr.

Forest Grove, IX-28 (Cole). 1913, Jl. N. Y. Ent. Soc., XXI, p. 136.

773. **Lispa tentaculata** (DeG.)

Hood River and Forest Grove, VI to XI (Cole).

774. **Hebecnema fulva** (Bigot)

Hood River, IX-4 (Cole). Malloch det.

775. **Hebecnema umbratica** (Meig.)

Hood River, VI-21 (Cole).

Family SCATOPHAGIDÆ

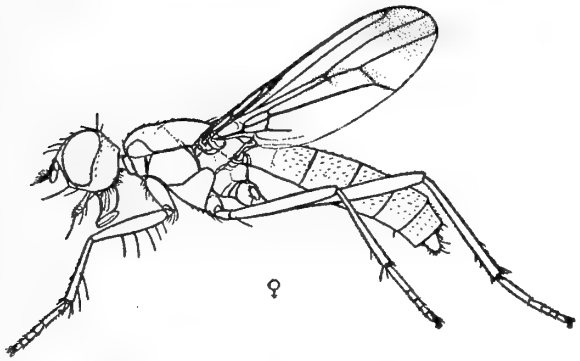

Fig. 37. *Parallelomma varipes* (Walk.)

These are commonly called dung-flies. Some of the species resemble Anthomyidæ, but the squamæ are quite small and there are more than four abdominal segments visible. Most of them are brownish or yellowish in color and are common in pastures about cow-dung. In some of the species the habits are predatory.

The larvæ have been bred from excrement and from the stems of plants. Aldrich lists 118 species from North America in his Catalogue.

776. **Cordylura**[24] **latifrons** Loew

Corvallis, V-2 (Lovett). Malloch det.

777. **Parallelomma**[25] **varipes** (Walk.)

Gaston, VII-10 (Cole).

778. **Scatophaga furcata** (Say)

Corvallis and Forest Grove, VI.

779. **Scatophaga merdaria** (Fabr.)

Hood River, X-29 (Childs); Forest Grove, III-14 (Cole). The adults are predaceous, having been taken with mycetophilids and leafhoppers.

780. **Scatophaga stercoraria** (Linn.)

Almost cosmopolitan. Many localities, V to X. The larvæ breed in excrement.

Family CLUSIODIDÆ

This family can be recognized by the chætotaxy of the head. The cross-veins of the wings are closely approximated except in Clusia and the sixth vein does not reach the wing margin. The adults are rather rare. They may be found on tree trunks, where they sometimes feed on exuding sap.

781. **Clusia occidentalis** Mall.

Mary's Peak, at base, V-14 (Lovett); Pamelia Lake, Mt. Jefferson, VII-27 (Bridwell). 1918, Proc. Ent. Soc. Wash., XX, p. 4.

[24] There are at least three undetermined species in material collected at Corvallis and Hood River, but the genus will have to be worked up before they can be named with certainty.

[25] One undetermined species is not uncommon at Hood River.

Family HELOMYZIDÆ

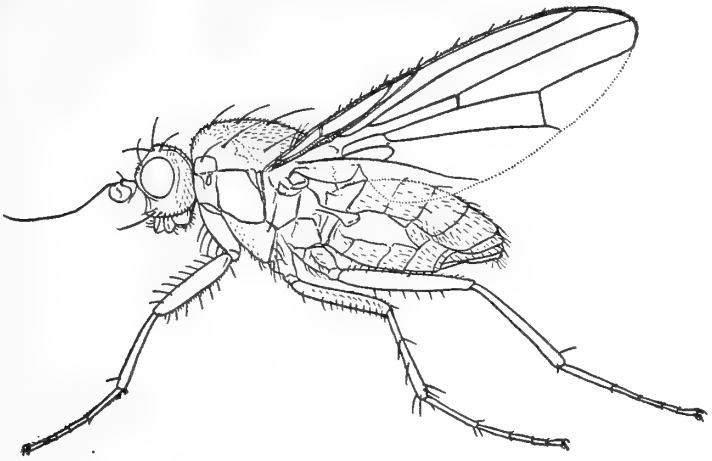

Fig. 38. *Œcothea fenestradis* (Fallén).

The flies of this family have the costa beset with prominent bristles and the wings are rather large. Some species live in caves and burrows, others are collected in damp meadows and shady places.

The larvæ have been bred from bat and rabbit-dung, from decaying wood, and from truffles.

782. **Helomyza barberi** Aldr.

Hood River, VI-3 and X-30 (Cole). 1908, Trans. Amer. Ent. Soc., XXXIV, p. 93.

783. **Helomyza limbata** Thoms.

Forest Grove, V-9 to IX-30 (Cole).

784. **Helomyza nemorum** (Meig.)

Hood River, X-11 (Cole). *H. assimilis* Loew is a synonym.

785. **Helomyza plumata** Loew

Mt. Jefferson, VII-12 (Bridwell); Mary's Peak, at base,

V-14 (Lovett); Nashville, VIII-8; Corvallis, V-10. This was placed as a synonym of *quinquepunctata* Say in Aldrich's Catalogue.

786. **Œcothea fenestralis** (Fall.)

Forest Grove, VI-3 (Cole).

787. **Tephrochlamys rufiventris** (Meig.)

Newport (L. O. Howard); Forest Grove, III-6 to V-20 (Cole and Lane); Corvallis, V-10.

788. **Leria pectinata** (Loew)

Newport (L. O. Howard); Forest Grove, V-12 (Cole).

789. **Leria serrata** (Linn.)

Baker, IV-9. The earliest described species of the family. Aldrich reports it common in many parts of Europe and North America. The larvæ have been bred from fungi and from hen manure.

790. **Eccoptomera simplex** Coq.

Hood River, VI-4 (Cole).

Family BORBORIDÆ

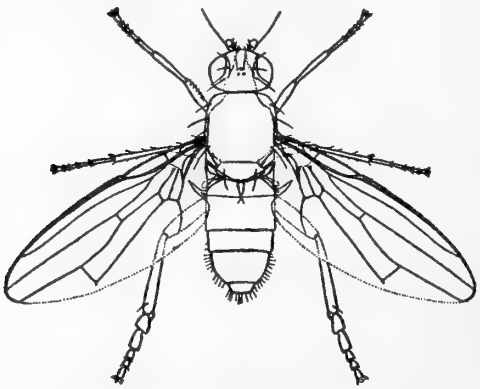

Fig. 39. *Copromyza equina* Fallén.

Most of these flies are quite small and black or brownish in color. They are found about decomposing vegetable and animal matter and are seen hovering over dung or sewage, in which the larvæ live. The larvæ of Leptocera are bred from fungi, diseased potatoes, etc., and are probably aquatic in some cases.

The following species were determined by Mr. A. Spuler, who has just completed a monograph of the family which should soon be published.

791. **Leptocera atra** (Adams)

Tillamook, III-26 (Burrill); Forest Grove, III-21 and Hood River, IX-29 to X-26 (Cole).

792. **Leptocera crassimana** (Halid.)

Tillamook, III-26 (Burrill); Forest Grove, III-21 and VI-2 (Cole).

793. **Leptocera fontinalis** (Fall.)

Portland, VIII-20 (Melander).

794. **Leptocera fuscipennis** (Halid.)

Hood River, VI-19 to X-26 (Cole).

795. **Leptocera** sp. nov. Spuler

Forest Grove, IV-2 and Hood River, IX-5 (Cole).

796. **Leptocera** sp. nov. Spuler

Hood River, IX-5 (Cole).

797. **Leptocera limosa** (Fall.)

Forest Grove, III-21 to IX-27 (Cole); Hood River, VI to IX and Corvallis, IX-10 (Cole); Tillamook, III-26 (Burrill).

798. **Leptocera** sp. nov. Spuler

Hood River, X-11 (Cole).

799. **Leptocera roralis** (Rond.)

Hood River, VI-4 to IX-29 and Forest Grove, III-21 (Cole); Portland, VIII-20 (Melander).

800. **Copromyza equina** Fall.

Everywhere abundant. Breeds in horse dung.

Family PHYCODROMIDÆ
Coelopidae

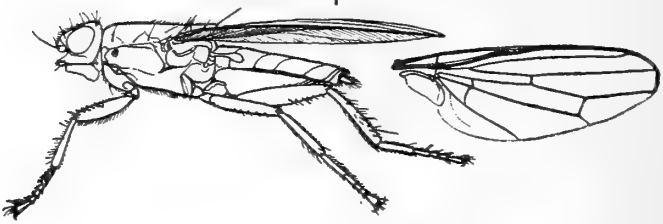

Fig. 40. *Cœlopa frigida* Fallén.

There are two genera, Cœlopa and Omomyia, in North America. Species of the former genus are found on the seabeach, often in large numbers about piles of kelp and seaweeds. They are about the size of species of Fucellia found with them and resemble them in general appearance, but when viewed under a lens are seen to be quite different.

801. **Cœlopa frigida** Fall.

Seaside and Newport Beach in July.

Family SCIOMYZIDÆ

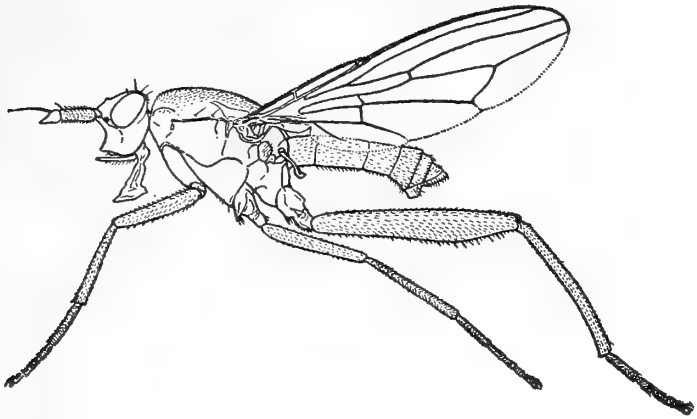

Fig. 41. *Sepedon pacifica* Cresson.

In these flies the head is short and broad and the face more or less retreating. The wings are long and are often spotted. The adults can be collected along the banks of small streams and in marsh and meadow land. The Tetanoceridæ are set aside in a separate family by some authors but they seem to be quite closely related. In flies of the genus Tetanocera the antennæ are very long and the wings usually pictured.

802. **Helcomyza mirabilis** Mel.

Tillamook, V (Reeher). 1920, Ann. Ent. Soc. Amer., XIII, p. 309.

803. **Sciomyza**[26] **simplex** Fall.

Oregon Agr. Exp. Station (G. F. Moznette).

804. **Melina nana** Fall.

Forest Grove, III-21 (Cole).

805. **Melina pubera** Loew

Corvallis, V-2 (Lovett); Hood River, VI-4 (Cole).

[26] According to the synonymy recently worked out by Dr. Melander the *Sciomyza* of authors becomes *Melina* Desvoidy.

806. **Neuroctena analis** Fall.

Corvallis (Moznette).

807. **Tetanocera vicina** Macq.

Common at Corvallis, V-15 to VII-17; Mary's Peak, IV-24; large series at Forest Grove, V-25 and IX-30 (Cole).

808. **Limnia pubescens** Day

Forest Grove, V (Cole).

809. **Limnia saratogensis** Fitch

Common at Corvallis, V-12 to IX-29; Mary's Peak, V-13; Forest Grove, V-25 (Cole).

810. **Dictya umbrarum** (Linn.)

Forest Grove, V-19 to IX-30 and Hood River, IX-4 to X-30 (Cole).

811. **Sepedon armipes** Loew

Corvallis; Hood River, VII-28 and IX-24 (Cole).

812. **Sepedon pacifica** Cress.

Forest Grove, IX-30 (Cole).

813. **Hedroneura rufa** (Panz.)

Forest Grove, IX-30 (Cole). This European species was first discovered at Potlatch, Idaho, by Dr. Melander; there the writer first collected them and later at Vernon, B. C. A good series was taken at Forest Grove in a small marsh.

Family SAPROMYZIDÆ
Lauxaniidae

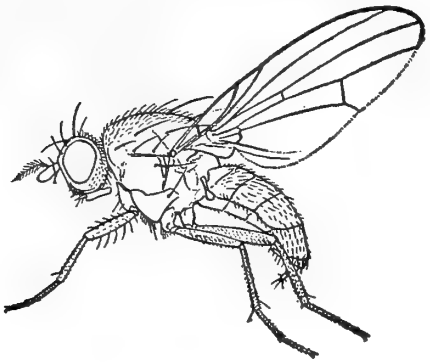

Fig. 42. *Minettia lupulina* (Fabr.)

The adults are comparatively small, with rather short legs. The wings are occasionally pictured, and the antennal arista usually plumose. The larvæ live in decaying vegetable matter or excrement.

814. **Sapromyza flaveola** Coq.

Corvallis, X-21; Mary's Peak, V-14; Hood River, VIII-21 (Cole); Talent, IX-30.

815. **Sapromyza planiscutum** (Thoms.)

Corvallis, V-2 and VI-14. Coquillett made this determination of the specimens in the Corvallis collection.

816. **Sapromyza univittata Coq.**

Corvallis, V-16 to VIII-13.

817. **Minnetia lupulina** (Fabr.)

Corvallis, V-16 to VII-17; Mt. Hood, VIII-10; Hood River, VI and VII (Cole).

818. **Minnetia nubila** Mel.

Recorded from Oregon by Aldrich. 1913, Psyche, XX, p. 74.

Family LONCHÆIDÆ

This family is very nearly related to the Sapromyzidæ but several dipterists have recently separated it from that group. Both the larvæ and adults have characters that will differentiate them.

819. **Lonchæa polita** Say

Hood River, VI-24 (Cole).

820. **Lonchæa tarsata** Fall.

Forest Grove, V-20 (Cole).

821. **Palloptera jucunda** Loew

Yaquina Bay, V-16 (Lovett).

822. **Palloptera terminalis** Loew

Forest Grove, IX-27 (Cole).

Family TRYPETIDÆ

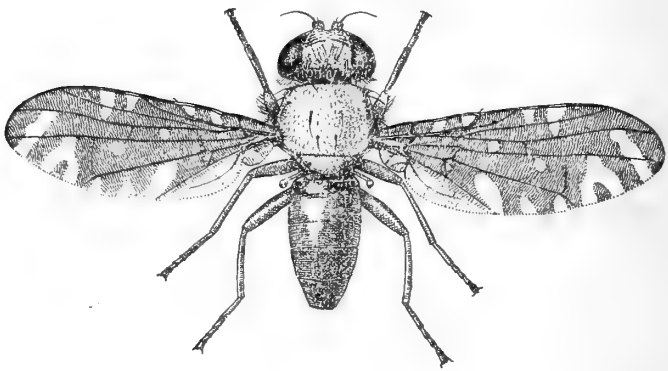

Fig. 43. *Aciura maculata* Cole.

These have been called "peacock-flies" because of their habit of elevating the wings and strutting about. The female usually has a large horny ovipositor. Many of the species have the wings marked and spotted in various ways.

The larvæ live in plant tissue, leaves, stems and fruits. Some of the species are gall-makers and the group contains many of our worst pests of fruit, both citrus and deciduous. They are especially injurious in tropical countries, in some places ruining nearly the whole fruit crop. Aldrich lists over 200 species from North America.

823. **Epochra canadensis** Loew

Common in western Oregon. The flies appear in May and June. The larvæ live in currants and gooseberries and are a serious pest.

824. **Œdaspis atra** Loew

Hood River, IX-8 (Cole).

825. **Rhagoletis caurina** Doane

Described from Oregon.

826. **Rhagoletis cingulata** (Loew)

Corvallis, Salem, Cove, Sheridan and vicinity of Portland. The larvæ are cherry-maggots.

827. **Rhagoletis pomonella** (Walsh)

Colestin VII-31 (E. P. Van Duzee). One specimen. This is the form bred from snowberry at Vernon, B. C., and recently published on by Mr. Downes. It cannot be distinguished from the eastern apple maggot but does not attack the apple here, confining itself to the snowberry, *Symphoricarpus racemosus.*

828. **Aciura maculata** Cole

Medford, V-28 (Noren); one specimen at Burns, V (Thompson). 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 252.

829. **Eutreta diana** O. S.

Corvallis, VI-21, with a label "sage brush"; Grant Co.; Narrows, VII-1. The type was bred from galls on wild sage, *Artemisia tridentata,* in Missouri by C. V. Riley.

830. **Eutreta longicornis** Snow

Blitzen River, VII-6. On examining one of the specimens Dr. Aldrich stated that it was not a true Eutreta.

831. **Carphotricha culta** (Wied.)

Albany, Corvallis, Vale and Forest Grove in June.

832. **Eurosta solidaginis** (Fitch)

Bred from galls on common golden-rod at Hood River (Childs).

833. **Xenochæta dichromata** Snow

Described from Mt. Hood.

834. **Neaspilota brunneostigmata** Doane

Duffy's Prairie, VII-26 (Lovett). The type was described without locality.

835. **Tephritis clathrata** (Loew)

Blitzen River, VII-6; Ashland, VIII-2 (E. P. Van Duzee).

836. **Tephritis despecta** (V. d. W.)

Narrows VII. This species is near *clathrata* Loew; it was described under the genus *Ensina*. Aldrich det.

837. **Tephritis finalis** (Loew)

Corvallis, VII, the larvæ and pupæ in seed pods and ovaries of *Eriophyllum lanatum*. It is a common species in the Northwest.

838. **Tephritis murina** Doane

Duffy's Prairie, 5,700 feet, VII-26 (Lovett).

839. **Tephritis variabilis** Doane

Corvallis, V-20 to VI-10 (Lovett); Horse Lake, alt. 6,000 feet, VII-25.

840. **Euaresta æqualis** (Loew)

Hood River, VIII-12 (Cole); Pendleton, VII-17 (Thompson). Breeds in seed pods of *Xanthium*.

841. **Euaresta araneosa** Coq.

Colestin, VIII-31 (E. P. Van Duzee). C. W. Johnson det.

842. **Urellia aldrichii** Doane

Corvallis, VII-22.

843. **Urellia mevarna** (Walk.)

Duffy's Prairie, VII-16 (Lovett).

844. **Urellia pacifica** Doane

Described from Oregon.

845. **Urellia solaris** Loew

Corvallis, VII-16.

Family ORTALIDÆ

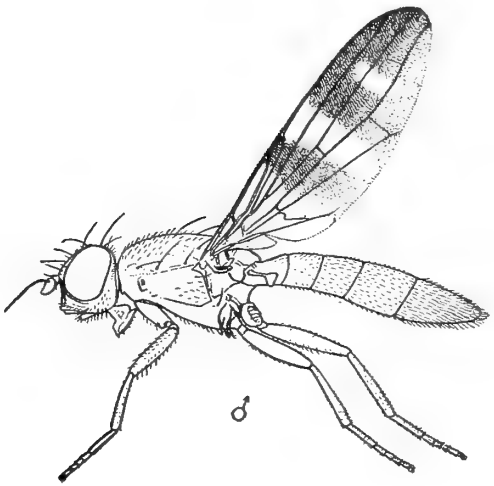

Fig. 44. *Chætopsis ænea* (Wied.)

These flies are small or of medium size and often with metallic colors. The head is of good size and the frons is broad; the legs are usually stout and rather short. Some

species, but not especially those in North America, have grotesquely formed heads. The wings are often strikingly marked. The adults are taken in meadows and tall grass. A few species are of economic importance. Aldrich lists about 150 species in his Catalogue.

846. **Tritoxa cuneata** Loew

Corvallis, VII-17 (Lovett).

847. **Tritoxa pollinosa** Cole

Warm Springs Valley, VII-7; one specimen at Burns, V (Thompson), the second specimen known. 1919, Proc. Cal. Acad. Sci., Ser. 4, IX, p. 252.

848. **Melieria occidentalis** Coq.

Blitzen River, VII-6. This species is not uncommon in parts of California.

849. **Anacampta latiuscula** Loew

Forest Grove, I-28 and V-21 (Cole).

850. **Anacampta longicauda** Hendel

Burns, V. Aldrich det.

851. **Anacampta stigma** Hendel

Burns, V (Thompson). 1911, Wien. Ent. Ztg., XXX, p. 23.

852. **Tetanops aldrichi** Hendel

Burns, V (Thompson). 1911, Wien, Ent. Ztg., XXX, p. 20.

853. **Tetanops apicalis** Cole, new species

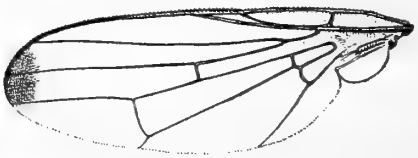

Fig. 45. *Tetanops apicalis* Cole, n. sp. Wing of holotype.

Body shining black, the eyes only slightly higher than long; wing with a small apical brown spot. Length 5.5 mm.

Female: Frons reddish brown, face yellow, occiput convex and black. Cheeks brownish yellow, gena corrugated to above antennæ. Frons deeply punctate almost to front ocellus. Eyes rounded, not much higher than long. Frons, occiput, and first two joints of antennæ with short, black, bristly hairs. First two joints of antennæ reddish, the third dark brown; arista blackish. Ocellar tubercle black. Palpi dark brown.

Thorax and pleura black, mesonotum opaque, the short hairs black and bristle-like; margins of the mesonotum shining black. Scutellum red with two apical black bristles; metanotum shining black; halteres reddish; several weak bristles along posterior edge of mesopleura and about eight weak propleural bristles; sternopleura below with a number of rather strong black bristles.

Abdomen entirely black, semishining above, with short black hairs which are sparse and hardly perceptible. Tibiæ, apices of femora, first two joints of tarsi and base of third brownish yellow; remaining tarsal joints and most of femora blackish brown. Middle tibiæ with three distinct apical spines which are lacking in the other tibiæ. Wings faintly infuscated, base and costal margin brownish, the veins mostly yellow; apical third of costal vein, posterior cross-vein, and apices of other veins dark brown. In the apex of the wing there is a rounded brown spot (see fig. 45).

Holotype, female, No. 842, Mus. Calif. Acad. Sci.; A. B. Black, collector, May 13, 1917.

Type locality, Corvallis, Oregon.

This species is in the group with *T. aldrichi* and *T. polita,* having rounded eyes, rugose and pitted frons, and black body.

854. **Tetanops luridipennis** Loew

Burns, VI-5 (Thompson). The single specimen is darker than the typical form and lacks the usual yellow color in the wings. It may be an undescribed species.

855. **Pseudotephritis vau** (Say)

Forest Grove, VII-12 (Cole).

856. **Chrysomyza demandata** (Fabr.)

Corvallis; Forest Grove, VII-5 (Cole). Reported breeding in horse-dung.

857. **Chætopsis ænea** (Wied.)

Hood River, VI-21 (Cole). Apparently rare in the Northwest.

858. **Seoptera vibrans** (Linn.)

Corvallis, VI-11.

Family SEPSIDÆ

Fig. 46. *Sepsis violacea* Meigen.

Usually small, black, and slender flies, with the abdomen narrowed basally. The wings are hyaline and often with a spot near the apex. They run about actively and are quick of flight. The adults are commonly seen about excrement and decaying vegetation.

859. **Themira latitarsata** Mel.

Corvallis (Cordley); Forest Grove, IX-28 (Cole). 1917, Wash. Agr. Exp. Sta., Bull. 143, p. 45.

860. **Sepsis luteipes** Mel.

Forest Grove, III-3 (Cole). 1917, Wash. Agr. Exp. Sta., Bull. 143, p. 29.

861. **Sepsis neocynipsea** Mel.

Hood River, VIII-21 (Cole). 1917, Wash. Agr. Exp. Sta., Bull. 143, p. 28.

862. **Sepsis signifera curvitibia** Mel.

Series taken at Corvallis, VIII-13 (Lovett). 1917, Wash. Agr. Exp. Sta., Bull. 143, p. 28.

863. **Sepsis vicaria** Walk.

Portland (Melander).

864. **Sepsis violacea** Meig.

Common at Corvallis and Hood River.

865. **Sepsis violacea hecate** Mel.

Portland, V-22 (Melander). 1917, Wash. Agr. Exp. Sta., Bull. 143, p. 22.

866. **Sepsis violacea similis** Macq.

Oregon City (Melander). Melander makes this form a variety of *violacea* in his recent revision of the family.

Family PIOPHILIDÆ

This group is now separated from the Sepsidæ. The species are mostly black in color and quite small; they differ from the Sepsidæ in having the costa broken near the termination of the first vein, the third and fourth veins parallel or slightly diverging, mesonotum finely pubescent, abdomen never with bristles, etc. The larvæ of some have the peculiar power of "jumping."

867. **Piophila casei** (Linn.)

A species of general distribution, the larvæ of which are known as "skippers" or "cheese-mites"; they occur in cheese, rotten fungi, fatty tissues, the fat of ham and bacon, and in dead bodies. Cases of enteric and nasal myiasis are attributed to this species.

868. **Piophila pusilla** (Meig.)

Forest Grove, IV-8 (Cole). First recorded from North America in 1913 by Melander.

869. **Mycetaulus bipunctatus** (Fall.)

Forest Grove, VIII-1 (Cole). This European species has a very wide distribution.

Family PSILIDÆ

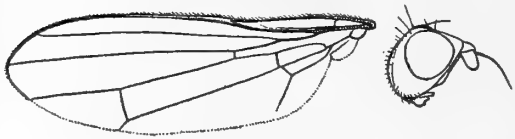

Fig. 47. *Psila rosæ* (Fabr.)

Small slender flies with long antennæ, usually shining and with a small clypeus. There are no oral vibrissæ. Some of the larvæ are known to live in roots and various plant galls. Melander records 38 species and subspecies in his recent synopsis of the family (Psyche, XXVII, no. 5, 1920).

870. **Loxocera collaris** Loew

Reported from Oregon by C. W. Johnson.

871. **Chyliza leguminicola** Mel.

Forest Grove, IV-23 (Rockwood). 1920, Psyche, XXVII, p. 99. Mr. Rockwood collected this species on plants of *Lupinus polyphyllus* Lindl., and found pupæ attached to the lower part of the plant in July.

872. **Chyliza scrobiculata** Mel.

Whitman Nat. Forest, VII-14 (Chamberlin). 1920, Psyche, XXVII, p. 98.

873. **Psila atrata** Mel.

Hood River, VI-10 (Cole). 1920, Psyche, XXVII, p. 97.

874. **Psila microcera** Mel.

Duffy's Prairie, VII-26 (Lovett). 1920, Psyche, XXVII, p. 95.

875. **Psila rosæ** (Fabr.)

Corvallis (Moznette). This is called the "carrot-rust fly" and is sometimes of economic importance.

Family MICROPEZIDÆ

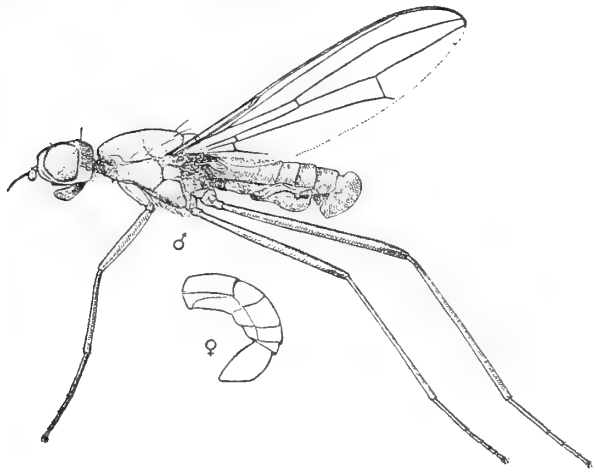

Fig. 48. *Calobata univitta* Walker.

Slender flies with large wings and long legs. The face is retreating in profile and the eyes comparatively small. The larval habits are unknown. The adults are predaceous on small insects.

876. **Calobata univittata** Walk.

Hood River VI (Cole). Rather common on rank foliage along a certain stretch of the Hood River.

Family EPHYDRIDÆ

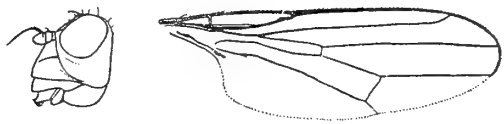

Fig. 49. *Parydra bituberculata* Loew. Head and wing.

These flies have a large head and most of them have a very large mouth. The costa is microscopically broken

twice and the anal cell wanting. There are no oral vibrissæ. Most of the species are quite small and are found at the edges of streams or lakes, often in immense numbers.

The larvæ of some species are found in alkaline lakes and ponds, others in sap and in the stems of aquatic plants.

877. **Notiphila decoris** Will.

Hood River, VI-19 to X-26 and Forest Grove, VII-16 (Cole).

878. **Psilopa comta** Meig.

Baker City, VIII-2 (Creel); Hood River, VI-19 to IX-5 and Forest Grove, IV (Cole).

879. **Ilythea spilota** Curtis

Hood River, X-26 (Cole).

880. **Discocerina aliena** Cress.

Forest Grove, V-7 (Cole). Cresson det.

881. **Hydrellia hypoleuca** Loew

Narrows, VIII-1; Hood River, X-26 (Cole).

882. **Hydrellia scapularis** Loew

Forest Grove, VI-3 and Hood River, X-26 (Cole); Corvallis, V-2 (Lovett). Cresson det.

883. **Octhera mantis** (DeG.)

Corvallis, V-2 (Lovett); Corvallis, IX-12 (Cole).

884. **Pelina truncatula** Loew

Hood River, VII-10 to IX-29 (Cole). Cresson det.

885. **Pelomyia occidentalis** Will.

Hood River, X-26 (Cole).

886. **Parydra appendiculata** Loew

Hood River, VI-5 to X-26 (Cole). Common.

887. **Parydra bituberculata** Loew

Forest Grove, V-25 (Cole).

888. **Parydra limpidipennis** Loew

Forest Grove, VI-6 and Hood River, X-26 (Cole).

889. **Parydra pinguis** (Walk.)

Hood River, VI-6 (Cole).

890. **Parydra quadrituberculata** Loew

Hood River, VI-3 to X-26 (Cole).

891. **Ephydra hians** Say

Albert Lake (Aldrich).

892. **Scatella crassicosta** Beck.

Forest Grove, IX-28 (Cole).

893. **Scatella mesogramma** Loew

Hood River, VI-19 (Cole).

894. **Scatella pentastigma** (Thoms.)

Hood River, VI-21 to X-26 (Cole).

895. **Scatella picea** Walk.

Hood River, X-26 (Cole).

896. **Scatella stagnalis** (Fall.)

Hood River, VI-6 to X-26 (Cole).

897. **Lytogaster gravida** (Loew)

Hood River, VI-19 to VII-10 (Cole). Cresson det.

898. **Mosillus subsultans** (Fabr.)

Hood River, IX-29 (Cole).

Family OSCINIDÆ

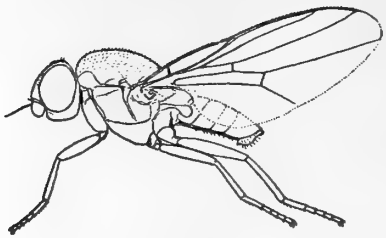

Fig. 50. *Chloropisca variceps* Loew.

These are sometimes called "frit-flies". They are small, bare, with a flat frons, short antennæ and wings, short legs, and ovate or elliptical abdomen. Many are colored or banded. The anal and second basal cells of the wing are absent. The postvertical bristles are converging. Swedish farmers apply the term "frits" to wheat ruined by the attacks of the wheat-fly. A few of the species in the family are blood suckers and probably carry putrefactive germs to open wounds.

Except where indicated the following determinations are by Dr. J. M. Aldrich.

899. **Meromyza americana** Fitch

Hood River, VI-2 and Parkdale, IX-5 (Cole). Cole det. The Wheat-stem Maggot, seldom of economic importance, but in local infestations it may destroy one per cent or more of the wheat heads, as it did in the Yakima Valley, Washington, in 1919.

900. **Diplotoxa unicolor** Beck.

Corvallis; Narrows, VII-1.

901. **Chlorops egregia** Beck.

Corvallis, V-24; Forest Grove, VI-6 (Cole).

902. **Chlorops obscuripennis** (Loew)

Corvallis.

903. **Chlorops sahlbergi** Loew

Forest Grove, V-2 (Cole). Cole det. Compared with a specimen determined by Becker.

904. **Chloropisca glabra** (Meig.)

Forest Grove, IV-22 to V-17 and Hood River, VI-3 to X-26 (Cole); Narrows, VII-1. Our commonest species.

905. **Chloropisca variceps** Loew

Corvallis, IV-9 and V-12; Hood River and Forest Grove, VI (Cole).

906. **Elachiptera decipiens** (Loew)

Forest Grove, IV-2 (Cole).

907. **Elachiptera nigriceps** (Loew)

Corvallis, V-2 (Lovett).

908. **Oscinis coxendix** Fitch

Corvallis, V-2 (Lovett).

909. **Oscinis frit** Linn.

Narrows, VII-1. A species of economic importance in Europe.

910. **Oscinis sulphurihalterata** Endl.

Corvallis, IV-2 (Chamberlin). Bred from cones of *Abies grandis*. 1911, Sitz. Ber. Ges. Natf. Freunde, Berlin, p. 222.

911. **Dicræus ruficeps** Meig.

Hood River, VI-3 (Cole). Cole det.

912. **Madiza conicola** Greene

Long's Ranch and Ashland, IX-2. Reared from cones of *Abies concolor*. 1919, Proc. Ent. Soc. Wash., XXX, p. 69.

Family DROSOPHILIDÆ

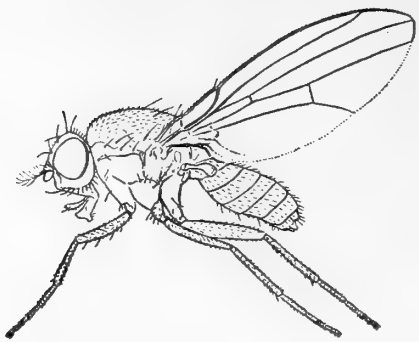

Fig. 51. *Drosophila busckii* Coq.

Small, usually yellow, flies, with a short and broad abdomen. Costa of the wing microscopically broken twice. Arista of antennæ plumose, the fronto-orbital bristles proclinate. They are often called "pomace-flies", and are found about cider mills and wine presses, also around decaying or fermenting fruit. The larvæ live in pomace and in the scum of fermenting juice. A few have quite different habits, one species has been reared from mealy bugs (*Pseudococcus*), one from spider's eggs and one is parasitic on the nymphs of the spittle bug, *Clastoptera obtusa*.

913. **Phortica humeralis** (Loew)

Hood River, VI-16 (Cole).

914. **Scaptomyza apicata** (Thoms.)

Corvallis; Forest Grove, V-11 (Creel); Hood River, IX-29 (Cole).

915. **Drosophila buskii** Coq.

Forest Grove, VIII-27, reared from clover heads (Rockwood); Corvallis, VI-15 and IX-14.

916. **Drosophila funebris** (Fabr.)

Corvallis, III-12 and IX-14; Hood River, X-11 (Cole).

917. **Drosophila melanogaster** Meig.

Hood River, X-11 (Cole). This species is better known as *D. ampelophila,* the subject of so many experiments in the study of heredity and evolution.

918. **Drosophila obscura** Fall.

Corvallis. Common European species. Melander det.

919. **Drosophila repleta** Wollas.

Corvallis, V-23. Melander det.

Family GEOMYZIDÆ

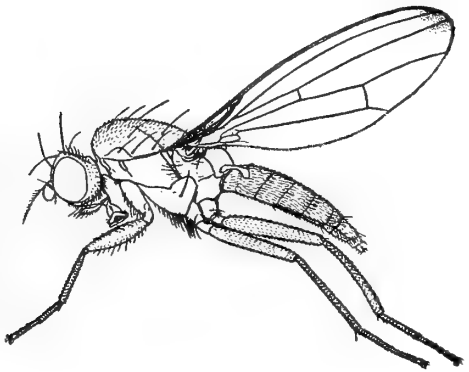

Fig. 52. *Geomyza lurida* (Loew)

Small or minute flies with rather large wings, the anal and basal cells complete. The clypeus is larger than in the Agromyzidæ and the foremost fronto-orbitals are directed backward; postvertical bristles convergent. The adults are collected by sweeping low plants and shrubbery, some species being quite common. The larvæ of some live in plant stems.

920. **Geomyza lurida** (Loew)

Hood River, VI-21 (Cole); Tillamook, III-26 (Burrill). Described in the genus *Balioptera.*

921. **Diastata eluta** Loew

Reported from Oregon by Melander.

922. **Anthomyza gracilis** Fall.

Forest Grove, VI-23 (Cole); Corvallis, VIII-12 (Lovett). According to Dr. Melander this species is common in Washington.

923. **Zagonia oregona** (Aldr.)

Hood River, VII (Aldrich).

924. **Tethina coronata** (Loew)

Forest Grove, V-12 (Cole).

925. **Tethina parvula** (Loew)

Narrows, VII-1; Blitzen River, VII-6.

926. **Trixoscelis frontalis** (Fall.)

Forest Grove, V-5 (Cole).

Family AGROMYZIDÆ

Small flies with widely separated eyes, bare or pubescent arista, and divergent postvertical bristles. The wings are rather short and rounded. The larvæ of most species are leaf miners; a few make galls.

927. **Cerodonta femoralis** (Meig.)

Gaston, VII-10 (Cole).

928. **Phytomyza albiceps** (Meig.)

Reported from Oregon by Melander. *P. genualis* Lw. is a synonym.

929. **Phytomyza chrysanthemi** Kowarz

Portland, III-10 (Lovett). Bred from larvæ mining chrysanthemum leaves.

930. **Phytomyza crassiseta** Zett.

Forest Grove, V-3 and VI-3 (Cole).

931. **Phytomyza flaviscutellata** Fall.

Reported from Oregon by Melander.

932. **Phytomyza ilicicola** Loew

Reported from Oregon by Coquillett.

933. **Phytomyza obscurella** Fall.

Forest Grove, IV-4 and Hood River, IX-5 (Cole).

934. **Agromyza abbreviata** Mall.

Hood River, VI-14 (Cole). Melander det. 1913, Ann. Ent. Soc. Amer., VI, p. 285.

935. **Agromyza æneiventris** Fall.

Corvallis, VII-28 (Lovett).

936. **Agromyza luctuosa** Loew

Forest Grove, IV-6 (Cole).

937. **Agromyza platyptera coronata** Loew

Hood River, VI-6 (Cole).

938. **Agromyza puella** Meig.

Hood River, VII-20 and Forest Grove, VII-26 (Cole).

939. **Agromyza reptans** Fall.

Reported from Oregon by Melander.

940. **Agromyza scutellata** Meig.

Forest Grove, V-20 (Cole).

941. **Agromyza scutellata orbona** Meig.

Hanging Valley, alt. 5,400 feet, collected VIII-2 (Lovett), emerged IX-1 from mines in lupine leaves.

942. **Agromyza scutellata variegata** Meig.

Forest Grove, VII-26 (Cole).

943. **Agromyza subvirens** Mall.

Hood River, VI-6 (Cole). 1915, Proc. U. S. Nat. Mus., XLIX, p. 105.

944. **Agromyza superciliosa** Zett.

Reported from Oregon by Melander.

945. **Agromyza tæniola** Coq.

Reported from Oregon by Melander.

Family MILICHIIDÆ

This family has long been associated with the Agromyzidæ. The costa is microscopically broken twice and there is an anal cell. The clypeus is small. The antennal arista is pubescent.

946. **Milichiella lactipennis** (Loew)

Hood River, VII-9 (Cole).

947. **Paramadiza haletralis** (Coq.)

Very commonly seen in houses on the windows, from February to September.

Family OCHTHIPHILIDÆ

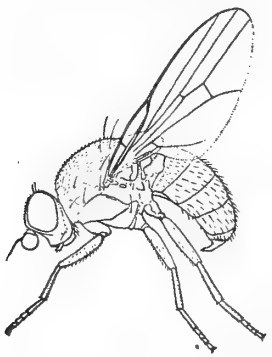

Fig. 53. *Leucopis griseola* Fallén.

A family closely related to the Agromyzidæ and until recently considered a subfamily of that group. There is no break in the costa of the wing and oral vibrissæ are absent. The species are densely gray pollinose. The larvæ have been bred from aphids and various soft scales.

948. **Ochthiphila juncorum** Fall.

Hood River, VI-28 (Cole).

949. **Leucopis griseola** Fall.

Hood River and Forest Grove, VI (Cole); Corvallis, VII-6 (Lovett) and V-24 (Bridwell). This species is aphidophagous and was observed in the larval stage feeding on the vetch aphis at Forest Grove.

Family HIPPOBOSCIDÆ

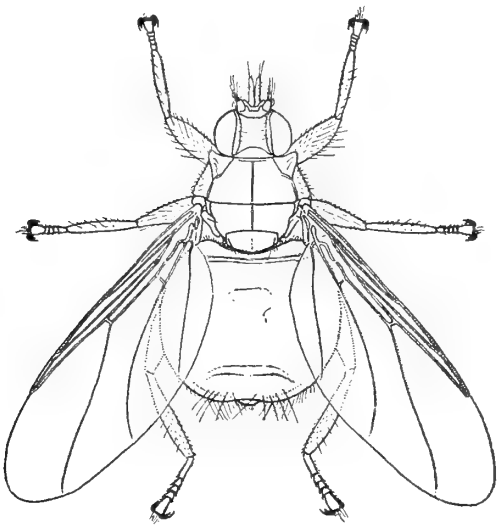

Fig. 54. *Olfersia americana* (Leach).

This peculiar group is quite different from any other in the Diptera, as we commonly think of that order. The adults are leathery in texture and resemble ticks. Some species are wingless and a few pass through the winged stage and lose these appendages. Most of the species are parasites on the bodies of birds. The horse-tick probably does not occur in North America. The sheep-tick occurs all

over the world. The female brings forth young in the pupal stage and has an uterine sac which secretes a milk to feed them.

950. **Ornithomyia anchineura** Speis.

Upper Alsea Valley, Benton Co., on Steller's jay.

951. **Olfersia americana** (Leach)

On great horned owl at Corvallis (Thompson)

952. **Melophagus ovinus** (Linn.)

The common sheep tick.